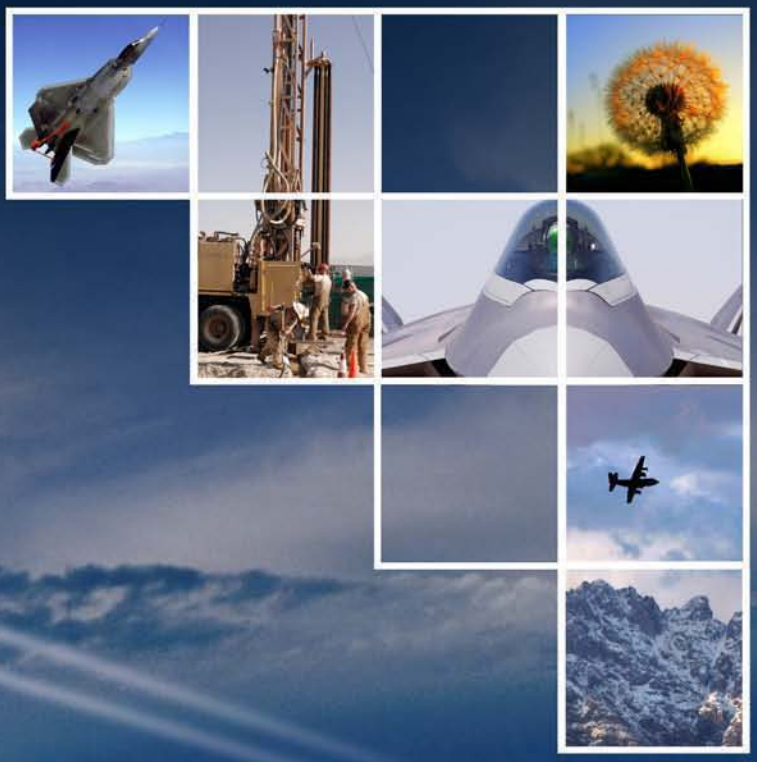

U.S. Air Force Energy, Environment, Safety and Occupational Health:

Managing for Operational Sustainability

2007 Inaugural Report

Disclaimer

This report identifies, compiles and describes existing Air Force Energy, Environmental, Safety and Occupational Health programs, processes and performance information essential to supporting Air Force operations and mission capabilities. Nothing in this report establishes or proposes Air Force doctrine, policy or regulation, or constitutes official planning or programming of funds. Generally, descriptions of fundamental Air Force postures, strategies or policies are accompanied by citations to the governing Air Force directive or other government document. It should be noted that this document has been prepared and issued as a voluntary initiative rather than a response to any specific statutory or regulatory requirements. As such, the intent is to provide an accurate and complete disclosure of Air Force programs, performance and future aspirations for consideration by our stakeholders—a responsibility we maintain as one of the largest and most complex organizations in the United States government.

U.S. AIR FORCE

U.S. AIR FORCE ENERGY, ENVIRONMENT, SAFETY AND OCCUPATIONAL HEALTH: MANAGING FOR OPERATIONAL SUSTAINABILITY 2007 INAUGURAL REPORT

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Our Commitment

U.S. Air Force EESOH Operational Sustainability Report 2007

U.S. AIR FORCE

Our Commitment

Kevin W. Billings, Acting Assistant Secretary of the Air Force for Installations, Environment & Logistics

The mission of the United States Air Force, "to fly, fight, and win . . . in Air, Space, and Cyberspace," is energy intensive, requires considerable access to and dependence on natural assets and is executed by one of the largest, most diverse workforces in the world.

Our strategic vision is to create a culture where we incorporate energy, environment, safety and occupational health as considerations in everything we do and as central elements in the foundation for operational sustainability. In accordance with our Air Force heritage, our role as a catalyst in innovation places us in a unique position to provide leadership. In our response to energy security considerations, and the need to protect our natural resources and the well-being of our Airmen, we are implementing strategies to enable these natural and human capital assets to most effectively sustain the Air Force mission and promote operational excellence. Ultimately, we must create a culture where all Airmen make energy, environment, safety and occupational health a value in everything we do, every day and one that fosters innovation and excellence in all Air Force operations.

Executive Summary

Executive Summary

This report represents an important waypoint on the flight path of the United States (U.S.) Air Force (hereinafter referred to in this report as Air Force). With unprecedented demands on the critical assets, systems and infrastructure that enable our mission, we must embrace and practice stewardship of the precious resources entrusted to us. These resources are essential to Air Force current strategic priorities and are the foundation for responding to and mobilizing against future threats with agility and effectiveness.

This report is the first of its kind for the Air Force. It reflects our view that the use and management of our economic, environmental and social resources must be balanced with our mission requirements to meet current commitments while ensuring availability for the challenges of tomorrow. Air Force Operational Sustainability is:

- Recognizing the direct and indirect impacts of Air Force operations on resources
- Achieving better understanding of the full measure of resources needed in the present and the future to ensure the successful conduct of Air Force operations
- Taking action by planning, designing and executing mission requirements in a manner that provides for the long-term sustainability of operations in the face of constrained resources.

In preparing this report, we looked carefully at how sustainability is viewed outside the Air Force—domestic and international governments, nongovernmental organizations and multinational corporations. We found a common use of the widely recognized Global Reporting Initiative's (GRI's) sustainability framework for reporting and chose to use it as the guideline for the structure and content of this report. Through this effort, we strive to openly and accurately inform our collective stakeholders on Air Force progress, initiatives and future directions in integrating economic, environmental and social considerations into day-to-day operational activities and our culture of innovation and excellence. For more about GRI's sustainability framework, go to *http://www.globalreporting.org*.

This report is organized against the report specifications required by the GRI guidelines and protocols and addresses the elements of the "triple bottom line" concept of sustainability.

Executive Summary

Chapter 1 highlights our mission and organizational profile; **Chapter 2** provides an overview of the functional programs—and associated key elements of our management approach—that have been established to address Energy, Environmental, Safety and Occupational Health considerations.

Chapter 3 and **Chapter 4** detail Energy and Environmental performance and accomplishments in conserving and safeguarding natural resources and natural infrastructure.

Chapter 5 and **Chapter 6** address our progress and accomplishments with respect to

	Metrics (units)	FY05	FY06	FY07	Percent Change 05 to 07
Mission	Air Force Appropriations ($B) [1]	$118.6	$127	$128.8	+8.6%
	Air Force end strength (000s) (Active) [2]	354	349	333	-5.9%
	Reserve end strength (000s) (Reserve and National Guard) [2]	182	180	177	-2.7%
	Civilian Personnel (000s)	164	169	164	0%
	Recruiting (Active Military) [1]	19,222	30,889	27,800	44.6%
Energy & Environment	Environmental Direct Funding ($ millions)	$1014	$991	$924	-8.9%
	Cleanup (BRAC, Environmental Remediation) ($M) [3]	$545.3	$539.6	$520	-4.6%
	Compliance, Pollution Prevention, Conservation ($M) [3]	$469	$451.8	$404	-13.9%
	Percentage facilities with EMS in Place [3]	N/A	N/A	100%	N/A
	Air Force New Environmental Enforcement Actions [3]	82	51	50	-39%
	Federal, State, Local Inspections [3]	520	622	589	+13.3%
	Violation Rate (new EAs/Inspections) [3]	15.8%	8.2%	8.5%	-7.3
	Overall SW Diversion Rate [3]	76%	64%	62%	-14%
	HW generated (million lbs by CY) [3,6]	21.1	20.3	16.8	-4.3%
	TRI releases (million lbs by CY) [3,6]	1.6	1.4	1.5	-6.3%
	Installations with up-to-date INRMPs [3]	80%	84%	72%	-8%
	Air Force facility water use (Billion gallons) [4]	38	36	38	0%
	Facility energy use intensity (KBtu/GSF) [4]	—	—	112.5	—
Safety, Occupational and Environmental Health	Military Accident Fatalities (aviation total) [5]	12	0	2	-83%
	Military Accident Fatalities (ground total) [5]	70	67	72	2.9%
	Air Force Civilian Lost Time Claims (per 100 Civilians) [5]	1.55	1.41	1.47	-5.2%

Notes: 1) Air Force FY05-07 Annual Financial Statements
2) Air Force IDEAS Database http://w11.afpc.randolph.af.mil/vbin/broker8.exe?_program=ideas.IDEAS_Step1.sas&_service=prod2pool3&_debug=0; 2007 USAF Almanac
3) DoD Annual Environmental Reports to Congress FY05 to FY07
4) DoD FY04-07 Annual Energy Management Reports http://www.acq.osd.mil/ie/irm/Energy/energymgmt_report/main.shtml
5) Air Force Safety Center http://afsc.af.mil/
6) Figures reported on a calendar year basis, but shown in the following fiscal year. n/a = not applicable. — = information not available in referenced source

Figure ES-1. Summary of Air Force Mission/Economic, Environment and Social Performance

social resources by describing Air Force Safety, and Occupational and Environmental Health performance; and engagement with stakeholders and the communities in which we operate.

Chapter 7 provides a special focus on the Air Force's leadership in understanding its Greenhouse Gas Emissions and carbon footprint.

Chapter 8 discusses future Energy, Environmental, Safety and Occupational and Environmental Health continual improvement initiatives to foster optimal support for Operational Sustainability.

Chapter 9 highlights the programs and processes to ensure the Air Force exercises fiduciary responsibility in the allocation of budgetary resources.

Chapter 10 summarizes key Air Force Energy, Environmental, Safety and Occupational and Environmental Health awards and recognitions; and provides an index against GRI reporting specifications and identifies key assumptions about the data cited in this report.

Consistent with our commitment to the efficient use and conservation of energy and natural resources, this report is being developed and disseminated only in electronic format through our public Web site (see *http://www.safie.hq.af.mil/esoh/index.asp*). Readers of this report are encouraged to review this report in the on-line format, but the report has been configured to allow local printing, if desired.

The summary table (figure ES-1 on previous page) presents the Air Force's annual mission and economic, environmental, and safety and occupational health performance data from Fiscal Year 2005 to 2007 and the percent change from FY05 to FY07, where applicable. Each of these performance areas is described in greater detail in subsequent chapters as indicated above. Chapter 10 of this report also provides sources and links to Air Force data reported, where applicable, for each of the recommended GRI report content specifications, economic, environmental and social responsibility performance metrics.

The Air Force has much to be proud of. Our heritage speaks of an aggressive willingness to embrace innovation; to relentlessly strive for continuous improvement and to never stand still in improving our ability to conduct our mission; and to serve the warfighter and defend our nation. Our energy, environmental, safety and occupational health activities are no exception to this legacy. Viewing the contribution of those activities in supporting the sustainability of operations provides a new way to see the effectiveness of our efforts and that we believe can highlight opportunities for additional improvement as well. Assembling the information in this report also showed us some gaps in our knowledge, pointing out deficiencies in our ability to understand our own performance in areas that we believe are important to our long-term success. Providing transparency into performance—even when it shows imperfections—is all for the good of the Air Force. We believe anyone reading this report is in some way a stakeholder in the Air Force and we would value your comments on our performance by e-mailing us, at *safiee.workflow@pentagon.af.mil*. ■

Chapter 1

Enabling the Air Force Mission Through Operational Excellence

Enabling the Air Force Mission Through Operational Excellence

Chapter 1

Air Force Mission and Strategic Priorities

The mission of the United States Air Force is to deliver sovereign options for the defense of the United States of America and its global interests—to fly, fight and win . . . in Air, Space and Cyberspace.

Delivering sovereign options means operating across the Joint Spectrum to provide the President with scalable choices that are unlimited by distance and time, and span the entire range from humanitarian assistance to nuclear strike. It includes the powerful option to use timely information to deter and to avoid use of kinetic weaponry. All these options have one common foundation—persistent, lethal, overwhelming air, space and cyberspace power massed and able to be brought to bear anywhere at anytime. The criterion for victory is to achieve the President's aims and the means is dominance. This is the Air Force contribution to the Joint Fight, with unique capabilities.

Strategy is about choices—what priorities are chosen, actions in support of those priorities, the order in which actions are taken and how resources are allocated against priorities to support the nation's objectives. Providing a Military Service under Title 10, most Air Force choices have to do with organizing, training and equipping air, space and cyberspace forces. As the foundation of the Air Force strategy, three specific Air Force priorities serve as the criteria for judging every choice we make today and tomorrow:

- Win today's fight
- Take care of our airmen
- Prepare for tomorrow

Each of these Air Force priorities flows from the national strategy and directly supports the priorities that the Department of Defense (DoD) senior leaders have defined for the DoD as a whole. By focusing on winning the war on terror while simultaneously preparing for the next war, whatever and whenever it may be, the Air Force sustains the nation's commanding advantage against the full spectrum of potential challengers.

> ***Every choice the Air Force makes must help win today's war, prepare for tomorrow's war, develop Airmen and modernize the force structure.***
>
> ***Air Force Strategic Plan 2006-2008***

By focusing on developing and caring for Airmen, the Air Force ensures the requisite skills needed to work alongside joint partners. Airmen will defeat terrorist networks and conduct the complex operations necessary to defend the country. By recapitalizing and modernizing air superiority, strike, space, mobility and other systems, the Air Force ensures the right capabilities to deter or defeat future threats to the nation.

Building and operating the world's foremost air, space and cyberspace force requires substantial investment and must provide the best possible value to the American people. Good stewardship demands the use of technology and other enablers that allow the Air Force to streamline and flatten organizations, reach back for support and implement more efficient operations and business practices. More ef-

Air Force Strategic Goals 2006-2008

- ***Foster mutual respect and integrity***
- ***Sustain air, space and cyberspace capabilities***
- ***Provide persistent situation awareness***
- ***Develop joint and battle ready trained Airman***
- ***Improve the total force quality of life***
- ***Implement open, transparent business and achieve a clean audit***
- ***Foster Air Force Smart Operations across the total Air Force***

Figure 1-1. Air Force Strategic Goals 2006-2008

ficient use of time and money today will help recapitalize and modernize Air Force resources to better meet future challenges and produce more combat capability for tomorrow. Just as the bar is set high for warfighting, the Air Force must set high standards for the stewardship of the nation's resources. Accordingly, the Air Force has established seven strategic goals to guide its efforts to create and sustain the capabilities required by DoD leadership, as seen in Figure 1-1.

For more information on the Air Force mission and strategic priorities, see the Air Force Strategic Plan 2006–2008, available at: http://www.af.mil/shared/media/document/AFD-060919-008.pdf.

Operational Sustainability

In conducting the Air Force mission, Air Force operations have substantial direct and indirect impacts on the economy, the environment and society. Sustainability is a school of thought that recognizes these types of impacts utilized in combination can determine the ultimate success or failure of an organization, regardless of the core purpose of the organization; and any organization striving for success over the long-term must manage these impacts holistically. As used in this report, Air Force Operational Sustainability is recognizing the direct and indirect impacts of Air Force operations on resources; achieving better understanding of the full measure of resources needed in the present and the future to ensure the successful conduct of Air Force operations; and taking ac-

tion by planning, designing and executing mission requirements in a manner that provides for the long-term sustainability of operations in the face of constrained resources.

To fulfill its current and future mission, the Air Force relies on a wide range of resources including energy sources, water, land availability, adequate airspace, access to the frequency spectrum; and skilled, trained and healthy Airmen and material availability (precious/specialty metals/minerals). Each of these assets provides a host of opportunities to sustain and even enhance the Air Force mission; some of the assets also pose potential constraints on the Air Force mission and must be carefully evaluated and managed to ensure availability today and into the future. This is especially necessary in a global context where, increasingly, demand for resources is forecast to exceed availability. Indeed, future conflicts that might involve Air Force operations are widely assumed to occur in situations where critical resources may be scarce or where access to an essential, scarce resource is controlled.

This report focuses on the performance of energy, environment, safety and occupational health (EESOH) programs that serve operational sustainability. In the office of the Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety and Occupational Health, EESOH policy for the Air Force is developed to meet mission requirements in accordance with these principals:

- **Comply with the law**—to instill programs and processes to assure adherence to applicable legal and other requirements
- **Protect and sustain resources**—to manage natural assets for ongoing availability to support Air Force operations
- **Care for our Airmen and our communities**—to safeguard those who lead, operate, train and supply the force structure
- **Be good financial stewards**—to efficiently and responsibly manage Air Force budgetary resources

These principals serve as a foundation for guiding operational sustainability considerations in EESOH policy development, engagement with stakeholders, measurement of performance and planning, and programming for EESOH for the long-term success of Air Force operations.

Key Risks, Impacts and Opportunities

The Air Force faces a broad set of mission requirements across the entire spectrum of warfare. The challenge to respond quickly, flexibly and decisively to emerging threats requires

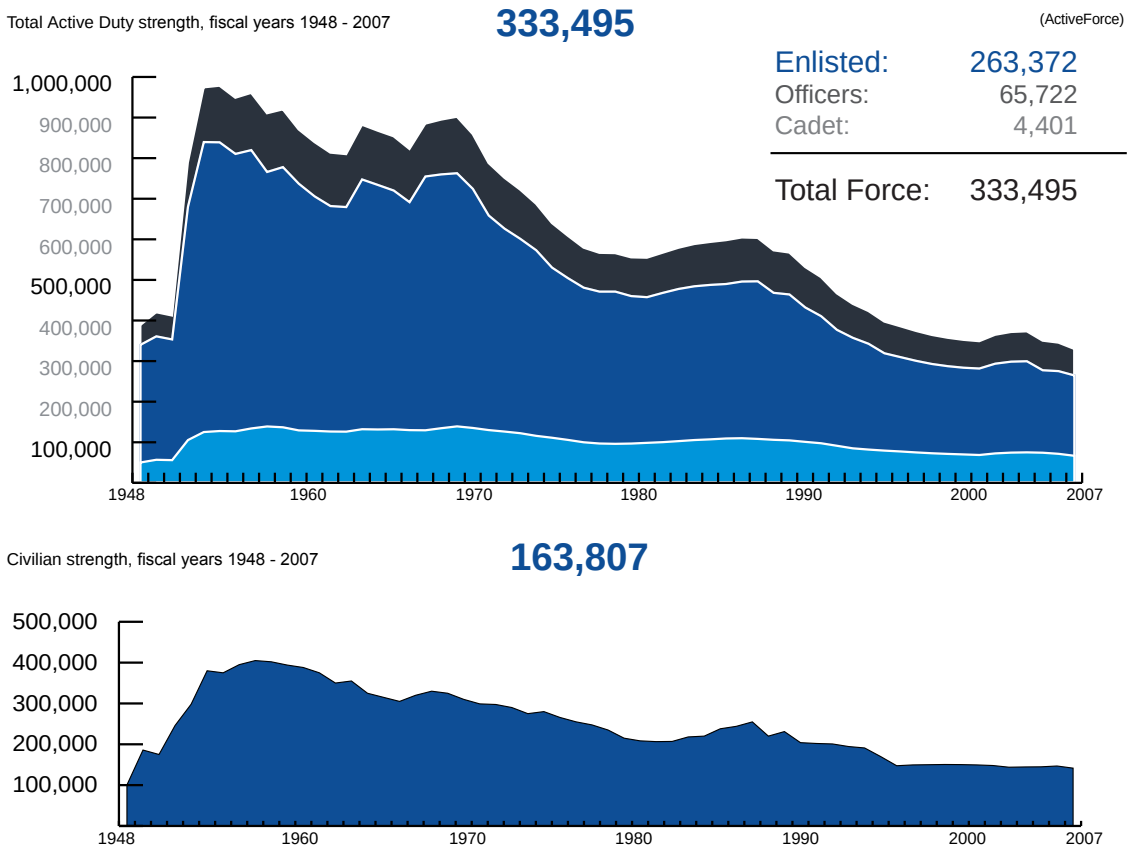


Figure 1-2. Air Force Active Military and Civilian Strength Trends through FY 2007

the very best efforts of Airmen throughout the Total Force. To accomplish this requires continued focused investment in people, science and technology, maintenance, sustainment, modernization and recapitalization.

Combat capability begins and ends with healthy, motivated, trained and equipped Airmen. The Air Force is committed to providing world class programs, facilities and morale-enhancing activities to Airmen, civilians and contractors. Additionally the Air Force is equally committed to ensuring that all Airmen in every mission area operate with infrastructure that is modern, safe and efficient—no matter what the mission entails.

As a means to best allocate resources to meet the increasing set of challenges, a bold, new initiative known as Air Force Smart Operations for the 21st Century has been undertaken. Through these efforts, the Air Force is not only addressing its challenges and risks, but also promoting innovation and focused, streamlined processes as sources of opportunity to provide lean, lethal and agile mission capabilities. For detailed information on Air Force risks, impacts and opportunities, refer to the current Air Force Posture Statement at *http://www.posturestatement.af.mil/.*

Air Force Organizational Profile

The U.S. Department of the Air Force is headed by the Secretary of the Air Force, who is supported by a staff called the Secretariat (See Air Force Civilian and military leadership roles

Air Force Personnel and Demographic Profile[1]				
	Employment Type			
	Active Duty[2]	Reserve	Air National Guard	Civilian Personnel
Total	**329,094**	**71,146**	**106,256**	**163,807**
Officers	65,722	16,269	13,863	N/A
Enlisted	263,372	54,798	92,229	N/A
Gender				
Male	80.42%	75.35%	81.89%	66.93%
Female	19.58%	24.65%	18.11%	33.07%
Marital Status				
Married	60.57%	60.49%	63.54%	N/A
Single	39.43%	39.51%	36.46%	N/A
Race				
White	73.85%	Not reported and tracked in IDEAS database (public version).	Not reported and tracked in IDEAS database (public version).	70.4%
Black or African American	14.70%			11.8%
Hispanic	8.8%			7.1%
Asian	2.41%			5.0%
Two or more races	1.70%			0.40%
Native Hawaiian or other Pacific Islander	0.89%			0.30%
American Indian or Alaskan Native	0.60%			1.1%
Not Identified	5.85%			3.9%
Education (highest degree attained)				
Officers				
Professional/ Advanced Degrees	50.63%	49.1%	29.2%	
Masters	49.37%			
BA/BS		48.7%	66.9%	
Unknown	N/A	2.1%	3.9%	
Enlisted				
Masters or higher	0.76%	1.6%	0.72%	14.8%
BA/BS	4.97%	9.3%	6.2%	20.3%
AA or equivalent	17.06%	13.9%	10.9%	9.7%
Some college, no degree	N/A	66.5%	71.2%	14.9%
High school diploma or equivalent	99.96%	8.1%	10.3%	32%
Less than high school or unknown	N/A	0.6%	0.7%	8.2%

[1] *Data Source is FY07 data extracted from the Air Force IDEAS database (see http://w11.afpc.randolph.af.mil/vbin/broker8.exe?_program=ideas.IDEAS_Step1.sas&_service=prod2pool3&_debug=0).*

[2] *Does not include cadets*

Figure 1-3. Air Force Personnel and Demographic Statistics

Figure 1-4. A Geographical Depiction of Major Air Force Installations Located Domestically and Abroad
http://www.af.mil/shared/media/ggallery/hires/AFG-070425-001.jpg

prescribed in the United States Code (USC) Title 10, Armed Forces: http://uscode.house.gov/download/title_10.shtml). The Air Force Chief of Staff heads the Air Staff and the military heads of the major commands report to the Chief of Staff. Most units of the Air Force are assigned to one of the major commands. Major Commands (MAJCOMs) are headed by general officers and have broad functional responsibilities. The basic unit for generating and employing combat capability is the wing. The typical Air Force Base is built around a wing. Some wings are commanded by a general officer, while others are headed by a colonel. A typical operational wing contains an operations group, which includes aircrews, intelligence functions and others; a maintenance group, which includes maintenance squadrons; a support group, which includes such functions as civil engineers, logistics readiness and security forces; and a medical group. Most individual officers and Airmen are assigned to a squadron, which may be composed of several flights. In addition to these units, there are numerous others associated with the Air Force organization, including centers, field operating agencies (FOAs) and direct reporting units (DRUs).

The Air Force operates throughout the world and is supported by a significant employee base of an estimated 700,000 inclusive of active military, civilian, guard and reserve personnel. Figure 1-2 illustrates the historical trend in Air Force military and civilian strength. In Fiscal Year 2007 (FY07), the Air Force had a total active military strength of 333,495 and 163,807 civilians, respectively. Figure 1-3 profiles AF personnel statistics and demographics.

The Air Force mission requires a global footprint to afford rapid response capability and strategic positioning of its assets. It operates 84 major installations and 82 minor installations worldwide (see figure 1-3). A major installation is defined as a self-supporting center of operations for actions of importance to Air Force combat, support, or training. A minor installation is a facility operated by an active, Reserve, or Guard unit of at least squadron size that does not otherwise satisfy the criteria for a major installation.

Air Force Governance Structure

DoD is a Cabinet agency headed by the Secretary of Defense, created in 1947 to consolidate pre-existing military agencies—the War Department and the Navy Department. Subordinate to DoD are the three military departments (Army, Navy and Air Force), each headed by a civilian secretary. The Joint Chiefs of Staff (JCS) constitute the corporate military leadership of DoD. The Chairman and vice chairman of the JCS serve full-time in their positions. The service chiefs are the military heads of their respective services, although JCS responsibilities take precedence.

The governance roles, responsibilities and authorities of DoD and each of its components, including the Air Force, are codified in 10 USC Title 10, Armed Forces.

Technician holding Synthetic Fuel JP-8 at Arnold AFB in TN

Air Force Operational Activities

To most readily understand the operations of the Air Force, this section describes the operational activities performed by each MAJCOM. In addition to the MAJCOMs listed below, the Air Force has 33 FOAs and three DRUs with subordinate elements to complement and support its mission. Also, there are two Reserve components: the **Air Force Reserve**, which is also a MAJCOM and the **Air National Guard**. The Air National Guard's federal mission is to maintain well-trained, well-equipped units available for prompt mobilization during war and provide assistance during national emergencies (such as natural disasters or civil disturbances). During peacetime, the combat-ready units and support units are assigned to most Air Force MAJCOMs to carry out missions compatible with training, mobilization readiness, humanitarian and contingency operations such as Operation Enduring Freedom in Afghanistan. Operating in the global theater, the Air Force—through its command missions—supports both traditional military and unique activities required to support Air Force operations, requirements of the Combatant Commanders, sister services; and other U.S. government agencies, foreign military partners, allies and

the communities in which we reside. These activities increasingly draw upon the Air Force to provide support "beyond the wire."

- **Air Combat Command**—Operates fighter, bomber, reconnaissance, battle-management and electronic-combat aircraft; provides command, control, communications and intelligence systems; and conducts global information operations.

- **Air Education and Training Command**—Develops America's Airmen today, for tomorrow with a vision to deliver unrivaled air and space education and training; recruits Airmen and provides basic military training, initial and advanced technical training, flying training, medical training; and professional military and degree-granting professional education.

- **Air Force Materiel Command**—Delivers war-winning technology, acquisition support, sustainment and expeditionary capabilities to the warfighter.

- **Air Mobility Command**—Provides rapid, global mobility and sustainment for America's armed forces. The command also plays a crucial role in providing humanitarian support at home and around the world. The command's men and women provide airlift, aerial refueling for all of America's armed forces, as well as aeromedical evacuation missions.

- **Air Force Reserve Command**—Provides citizen Airmen to deliver sovereign options for the defense of the United States and its global interests to fly and fight in air, space and cyberspace.

- **Air Force Space Command**—Delivers trained and ready Airmen with unrivaled

A crew performs a pre-flight check on a C-130 at Little Rock Air Force Base, Ark.

space capabilities to defend America. Strategic priorities are: Preserve and expand its ability to deliver space effects to the joint fight; provide safe and secure strategic deterrence; develop, field and sustain dominant space capabilities on time and on cost; and attract, develop and retain people with the expertise necessary to meet the challenges of the future.

- **Air Force Special Operations Command**—Provides specialized air power support, including shaping and stability operations, battlefield air operations, information operations, intelligence, surveillance and reconnaissance, specialized air and space mobility, precision engagement and agile combat support.

- **Air Force Cyber Command (Provisional**) (AFCYBER)(P))—Officially activated as a Provisional Command September 18, 2007, AFCYBER(P) will prepare the way for the eventual stand-up of a full MAJCOM whose mission will be to provide combat ready forces trained and equipped to conduct sustained global operations in and through cyberspace, fully integrated with air and space operations. AFCYBER(P) will provide robust, survivable access to cyberspace with offensive and defensive capabilities that ensure cross-domain freedom of action for our friends and allies and deny the same to our adversaries.

- **Pacific Air Forces**—Provides ready air and space power to promote United States interests in the Asia-Pacific region during peacetime, through crisis and in war.

- **United States Air Forces in Europe**—Delivers full-spectrum options to combatant commanders; and leads and supports joint, coalition, NATO and warfighting headquarters operations promoting regional stability through focused theater engagement.

For further information on the mission and activities of Air Force Commands and other organizations, see The Book 2008 published by the Air Force News Agency at *http://www.af.mil/news/airman*.

Report Profile, Scope and Boundary

This Inaugural Report has been developed as a voluntary act in accordance with the Global Reporting Initiative's (GRI's) sustainability reporting framework, an internationally recognized and widely adopted series of guidelines. Specifically, we have adopted Version 4 3.0 (G3) of GRI's Sustainability Reporting Guidelines augmented by the GRI's Sector Supplement for Public Agencies (Pilot 5 Version 1.0). The Air Force self declares that this report has been prepared in accordance with GRI Application Level B (see Figure 1-5 for applicable definitions and descriptions).

To demonstrate conformance to the GRI guidelines, Chapter 10 provides a comprehensive index consisting of a series of tables that identify the location of reported performance metrics throughout the report and inputs against required GRI reporting specifications. Additionally, the index provides links to detailed information references available through Air Force or other publicly available sources. As our first report, we have compiled and reported annual performance results for mission, energy, environmental, and safety and occupa-

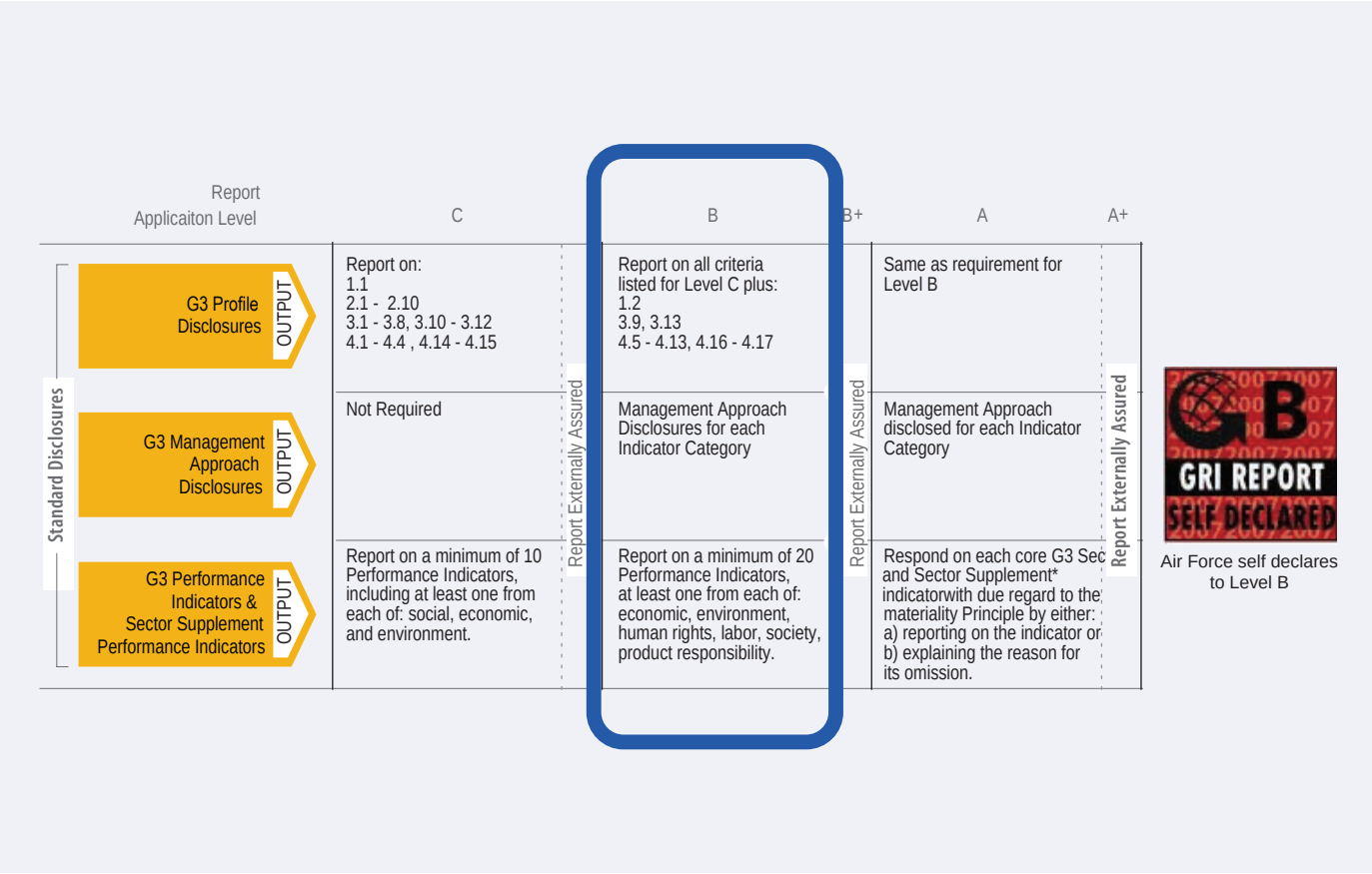


Figure 1-5. Air Force Disclosure Summary for GRI Application Level

tional health areas based on publicly available Air Force reports and information sources. All data in this report covers the period for FY05 to FY07, unless otherwise specified. In selected instances, data are presented against alternate time periods as a result of different reporting requirements or submission cycles (e.g., calendar year versus fiscal year submission requirements).

The Air Force organization consists of operational and institutional support organizations, which collectively support a complex and expansive mission and spectrum of responsibilities. As such, this report includes highlights of Air Force success stories to recognize achievements in leveraging Energy, Environmental, and Safety and Occupational Health to promote operational sustainability. It is important to note that these are representative examples and do not account for all of the important initiatives and contributions made by Airmen each and every day.

The Air Force recognizes that operational sustainability—and the underpinning of Energy, Environmental, and Safety and Occupational Health performance—requires ongoing improvements, recalibration as necessary and a commitment to excellence over the long term. Similarly, there are areas of this first report that require refinement in data consistency. As a result of reporting cycle differences we have selected gaps to be addressed, e.g., in the scope and areas of presenting greenhouse gas emissions. As the Air Force monitors our performance in all mission related areas, this report and future versions will be informed and improved.

Readers of this report are invited to provide comments to the Office of the Deputy Assistant Secretary of the Air Force (Energy, Environment, Safety and Occupational Health) via e-mail at *safiee.workflow@pentagon.af.mil* or phone at (703) 697-9297. ■

Airman maintaining a solar security system at Kirkuk AB in Iraq

Chapter 2

Programmatic Overview—The EESOH Management Framework

Chapter 2

As the Air Force modernizes its force and systems, it is also modernizing internal business processes with an aim to efficiently support the goal of lean and agile capabilities. These efforts embrace efficiency and unity of purpose to focus precious resources on strategic priorities and are reinforced through government mandates such as the President's Management Agenda and Office of Management and Budget Scorecards. The basis for these imperatives is the challenge to promote programs and operations that practice disciplined management and instill accountability as a means to drive improved performance.

Air Force Operational Sustainability is dependent upon organizational effectiveness today and tomorrow and relies on an intricate network of processes and resources—or a system of systems. These systems are integrated and aligned with the Air Force mission and strategic goals. Similarly, the Air Force has developed management controls and processes to address Energy, Environment, Safety, and Occupational Health (EESOH) considerations. These include a broad array of legal requirements, such as statutes, regulations, Executive Orders, agreements and standards. While largely developed on an individual program basis in response to operational mission requirements and differing regulatory drivers and standards, the Air Force has invested considerably in these areas and developed a comprehensive set of policies, instructions and guidance to institutionalize these programs throughout the enterprise. These consist of Air Force Policy Directives (AFPDs), Air Force Instructions (AFIs), Air Force Occupational Safety and Health Standards, Air Force Manuals and Air Force Pamphlets. The development of Air Force EESOH policy considers higher order Department of Defense (DoD) directives and

> ***"This administration is dedicated to ensuring that the resources entrusted to the federal government are well managed and wisely used. We owe that to the American people."***
>
> ***—President George W. Bush; from the President's Management Agenda (August, 2001)***

ENVIRONMENTAL		SAFETY	
AFH32-7084	AICUZ Program Manager's Guide	AFI90-801	Environment, Safety and Occupational Health Councils
AFI32-1001	Operations Management	AFI90-821	Hazard Communication
AFI32-1021	Planning and Programming Military Construction (MILCOM) Projects	AFI90-901	Operational Risk Management
AFI32-1022	Planning and Programming Nonappropriated Fund Facility Construction Projects	AFI91-202	The US Air Force Mishap Prevention Program
AFI32-1023	Design and Construction Standards and Execution of Facility Construction Projects	AFI91-204	Safety Investigations and Reports
AFI32-1024	Standard Facility Requirements	AFI91-205	Nonnuclear Munitions Safety Board
AFI32-1032	Planning and Programming Appropriated Funded Maintenance, Repair and Construction Projects	AFI91-301	Air Force Occupational and Environmental Safety, Fire Protection and Health (AFOSH) Program
AFI32-1052	Facility Asbestos Management	AFI91-302	AFOSH Standards
AFI32-1053	Pest Management Program	AFMAN91-201	Explosives Safety Standards
AFI32-7001	Environmental Budgeting	AFMAN91-224	Ground Safety Investigations and Reports

Continued on next page

Figure 2-1. Air Force Energy, Environment, Safety and Occupational Health Standards, see www.e-publishing.af.mil/ for full listing of Air Force publications

ENVIRONMENTAL	
AFI32-7002	Environmental Information Management System
AFI32-7006	Environmental Program in Foreign Countries
AFI32-7020	The Environmental Restoration Program
AFI32-7040	Air Quality Compliance
AFI32-7041	Water Quality Compliance
AFI32-7042	Solid and Hazardous Waste Compliance
AFI32-7044	Storage Tank Compliance
AFI32-7045	Environmental Compliance Assessment and Management Program (ECAMP)
AFI32-7047	Environmental Compliance Tracking and Reporting
AFI32-7060	Interagency and Intergovernmental Coordination for Environmental Planning
AFI32-7061	The Environmental Impact Analysis Process
AFI32-7062	Air Force Comprehensive Planning
AFI32-7063	Air Installation Compatible Use Zone Program (AICUZ)
AFI32-7064	Integrated Natural Resources Management
AFI32-7065	Cultural Resources Management Program
AFI32-7066	Environmental Baseline Surveys in Real Estate Transactions
AFI32-7080	Pollution Prevention Program
AFI32-7086	Hazardous Materials Management
AFI32-9001	Acquisition of Real Property
AFI32-9002	Use of Real Property Facilities
AFI32-9003	Granting Temporary Use of Air Force Real Property
AFI32-9004	Disposal of Real Property
AFPAM32-1010	Land Use Planning
AFPAM32-7043	Hazardous Waste Management Guide
AFPD32-10	Installations and Facilities
AFPD32-30	Explosive Ordnance Disposal
AFPD32-40	Disaster Preparedness
AFPD32-70	Environmental Quality
AFPD32-90	Real Property Management

ENERGY	
Air Force Aviation Fuel Conservation Memorandum	21 September 2006
Air Force Policy Directive (AFPD) 23-3	"Energy Management," September 7, 1993
Secretary of the Air Force Memorandum	"Executive Order (EO)13423, Strengthening Federal Environmental, Energy and Transportation Management," September 18, 2007

Note: This figure does not include Command-level guidance and base-level documents.

SAFETY	
AFOSHSTD91-118	Training Systems Fire Protection
AFOSHSTD91-119	Process Safety Management (PSM) of Highly Hazardous Chemicals
AFOSHSTD91-20	Vehicle Maintenance Shops
AFOSHSTD91-25	Confined Spaces
AFOSHSTD91-38	Hydrocarbon Fuels—General
AFOSHSTD91-46	Materials Handling and Storage Equipment
AFOSHSTD91-5	Welding, Cutting and Brazing
AFOSHSTD91-501	Air Force Consolidated Occupational Safety Standard
AFOSHSTD91-66	General Industrial Operations
AFOSHSTD91-67	Liquid Nitrogen and Oxygen Safety
AFOSHSTD91-68	Chemical Safety
AFPAM90-902	Operational Risk Management (ORM) Guidelines and Tools
AFPAM91-210	Contract Safety
AFPAM91-212	Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques
AFPAM91-216	USAF Safety Deployment and Contingency Pamphlet
AFPD90-8	Environment, Safety and Occupational Health
AFPD90-9	Operational Risk Management
AFPD91-2	Safety Programs
AFPD91-3	Occupational Safety and Health

OCCUPATIONAL HEALTH	
AFI48-101	Aerospace Medicine Operations
AFI48-102	Medical Entomology Program
AFI48-105	Surveillance, Prevention and Control of Diseases and Conditions of Public Health or Military Significance
AFI48-123 V1,2,3	Medical Examinations and Standards
AFI48-144	Safe Drinking Water Surveillance Program
AFI48-145	Occupational and Environmental Health Program
AFI48-148	Ionizing Radiation Protection
AFMAN48-125	Personnel Ionizing Radiation Dosimetry
AFMAN48-153	Health Risk Assessment
AFMAN48-154	Occupational and Environmental Health Site Assessment
AFOSHSTD48-137	Respiratory Protection Program
AFOSHSTD48-139	Laser Radiation Protection Program
AFOSHSTD48-14	Swimming Pools, Spas and Hot Tubs and Bathing Areas
AFOSHSTD48-20	Occupational Noise and Hearing Conservation Program
AFOSHSTD48-22	Occupational Exposure to Hazardous Chemicals in Laboratories
AFOSHSTD48-8	Controlling Exposures to Hazardous Materials
AFOSHSTD48-9	Radio Frequency Radiation (RFR) Safety Program
AFPAM48-151	Thermal Injury
AFPD48-1	Aerospace Medicine Program

Figure 2-1, continued. Air Force Energy, Environment, Safety and Occupational Health Standards, see http://www.e-publishing.af.mil/ for full listing of Air Force publications

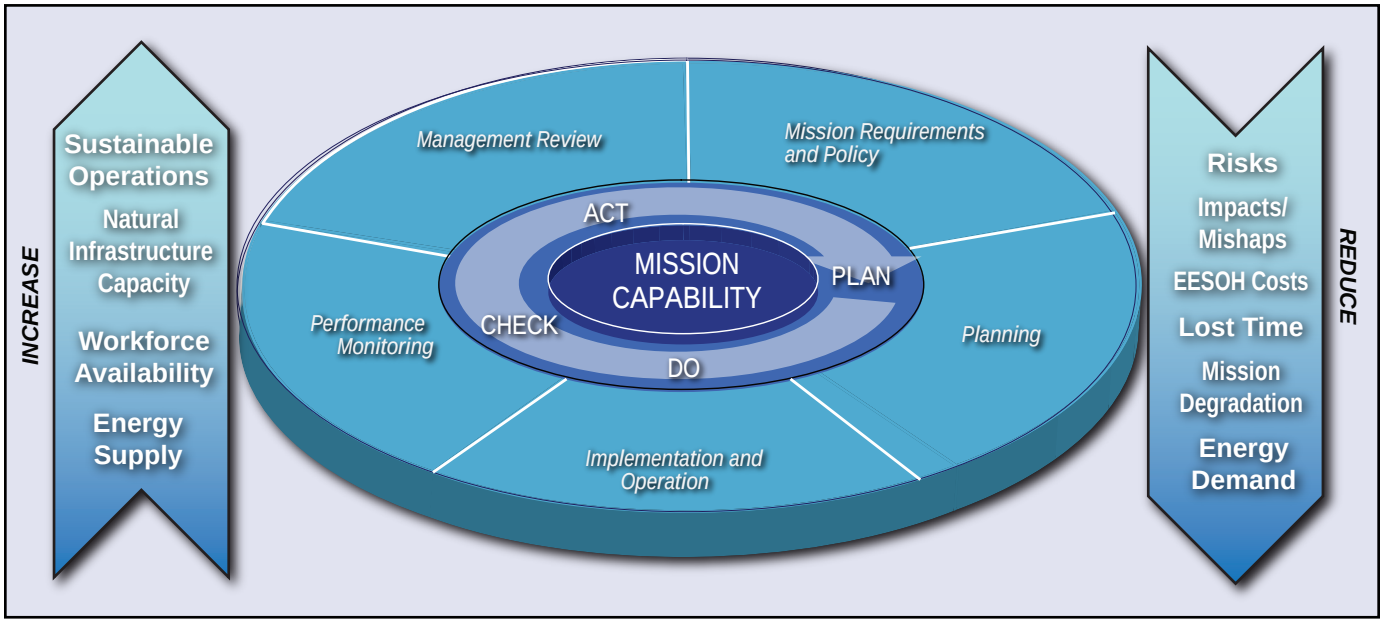


Figure 2-2. Air Force Mission-Integrated EESOH Management Framework

instructions to ensure alignment with overarching DoD policy direction (see official website for DoD issuances http://www.dtic.mil/whs/directives/corres/dir.html). Figure 2-1 provides a summary listing of applicable Air Force EESOH polices and standards (note this summary does not include all Command-level guidance and base-level documents).

The Air Force promotes Air Force Operational Sustainability by following a general management construct generally described as a "management system." The future of EESOH management will build off of and continue to integrate existing management processes and controls into a cohesive system for continual improvement.

This remainder of this chapter provides an overview of the general EESOH management framework and then reviews the key elements of individual programs for Energy, Environmental, Safety and Occupational Health management.

The Air Force EESOH management framework is a broadening of the classic Plan, Do, Check, Act construct at all appropriate Air Force facilities as required by Executive Order, DoD and Air Force policies and integrates established Air Force Energy Management, Environmental Management System, Safety Operational Risk Management and Occupational and Environmental Health Risk Assessment. By leveraging existing management system elements, the Air Force takes advantage of historical program and process investments, as well as lessons learned in areas such as policy development, training, and assessing and reviewing system performance. Further, the Air Force framework incorporates a focus on aligning EESOH priorities and activities with mission and operational requirements, assessing opportunities and deficiencies in natural infrastructure capacities and workforce availability, improving EESOH knowledge management and policy analysis, and facilitating the identification of technology and research and development needs as well as of acquisition and procurement integration opportunities. The overall structure of the Air Force

EESOH management framework is depicted in Figure 2-2.

In addition, EESOH management interfaces with and is supported by a number of other Air Force processes and systems including the Air Force Planning System established by AFPD 90-11; the Air Force Planning, Programming and Budgeting System established by AFPD 16-5; the Air Force Acquisition System established by AFPD 63-1; the Air Force Capabilities Based Planning Process (established by AFPD 10-6); the Air Force Mission and Operational Requirements (established by AFPD 10-6); and the National Environmental Policy Act and Environmental Impact Analysis Process established under AFI 32-7061.

The EESOH management functions provide vital resources and operational support that enable the Air Force mission. The key program elements that direct Air Force execution in each of these functional areas—and relevance to Operational Sustainability—is described in the sections below.

Air Force Energy Management

Air Force Energy Policy

As the largest Federal energy user, the Air Force consumes significant amounts of energy in executing its National Defense mission. The Air Force has a comprehensive energy policy and strategy that identifies the imperative to eliminate waste and conserve resources as well as seek new, alternative sources of energy. In Fiscal Year 2007 (FY07), the Air Force has concentrated on solidifying its energy policies to meet new Presidential and statutory requirements and establishing its energy strategy. On September 18, 2007, the Secretary of the Air Force issued a memorandum, which outlines the energy strategy of the Air Force and communicates the commitment to meet the goals stated by the President in Executive Order (EO) 13423.

The Air Force's energy vision of "*Make Energy A Consideration In All We Do*" is the foundation of the three major pillars of the Air Force Energy Strategy, which are Reduce Demand, Increase Supply and Culture Change. From aviation to facilities to vehicles and ground equipment energy the Air Force is committed to reducing our energy consumption while increasing use of new renewable and alternative energy sources all while executing our missions in support of the National Defense. However, the Air Force understands that the change agent to accomplish our energy goals will be culture change, which is the third pillar in the Air Force Strategy.

Air Force Energy Organizational Responsibilities

Headquarters Air Force is responsible for policy oversight and advocacy of the Air Force's energy management program. The Assistant Secretary of the Air Force for Installations, Environment & Logistics (SAF/IE), was designated as the Air Force's Senior Energy Official on September 4, 2007. This designation imparts the appropriate management structure within the Air Force to execute the energy strategy and manage the complex energy decisions that span all Air Force organizations.

As energy affects all organizations within the Air Force, the Headquarters Air Force established an "Energy Senior Focus Group (SFG)" to address the Air Force's most challenging energy issues. Chaired by the Senior Energy Official with participation by appropriate Headquarters Air Force organizations, the cross-functional group provides the leadership structure to oversee and provide guidance for energy issues and challenges throughout the

Air Force. The Energy SFG meets quarterly and is supported by sub-level working groups that are resolving specific energy issues.

Mirroring the structure of the Energy SFG, the Secretary of the Air Force directed each Major Command (MAJCOM) and installation to form Energy Management Steering Groups (EMSGs) comprised of members of each discipline across the command and installation. EMSGs report to the MAJCOM or Installation Commander, thus establishing an appropriate energy management structure throughout the Air Force command structure. As these groups mature, energy considerations are intertwined into the decision-making process of all Air Force organizations and this creates a key component of culture change.

Energy performance statements and ratings have been developed for all MAJCOM and installation energy managers and resource efficiency managers. They are rated on implementing energy conservation measures to meet Federal goals and EOs for their commands and installations. These performance statements provide the structure at the tactical level to execute the Air Force's energy strategy.

Air Force Energy Training and Awareness

A key component of the Air Force energy strategy is to create a culture change through awareness. Energy awareness bridges the gap between purely technical approaches to enhanced energy performance—namely installation of new equipment and optimization of infrastructure systems operation—and the behavioral and attitudinal changes that must be embraced to institutionalize a culture that will continuously reduce energy consumption. The following are key elements of the Air Force strategy for enhancing energy awareness through Education and Training (as referenced in the draft United States Air Force Infrastructure Energy Strategic Plan anticipated for issuance by the Air Force Civil Engineer in 2008):

- Annually review the energy education and training program at the Program Review Committee chaired by the Office of the Civil Engineer (AF/A7C) to ensure alignment of courses with current policy and guidance and senior leader vision.
- Develop an energy training course to be applied at all technical Civil Engineer schools.
- Develop annual energy refresher course for technical staff and base contracting personnel.
- Develop an Air Force-wide base facility manager's energy handbook.
- Develop an Air Force-wide distance learning energy course for the base populace that can be incorporated into ancillary training programs.

Collectively, these efforts will provide proper training to Energy Managers and technical personnel who are fundamental to the identification of energy opportunities, development of planning/programs and tracking progress. Additionally, an educated workforce and populace will be equipped to implement energy initiatives and to effectively manage energy resources.

Air Force Energy Monitoring and Follow Up

The Air Force is establishing procedures and management information systems for obtaining, compiling and tracking energy performance data to monitor progress in fulfilling established federal agency and DoD energy management goals. Existing energy program elements are being augmented with performance management initiatives to establish per-

formance measures that are tied to the overall energy strategy of reducing energy intensity, increasing renewable energy use, constructing sustainable facilities and proactively managing utility costs. The Headquarters Air Force Infrastructure Work Group began developing standardized Infrastructure Energy metrics to be promulgated throughout the Air Force in 2008.

In addition to tracking technical performance and monitoring energy efficiency, reward and recognition programs can change behavior by inspiring others and garner support and pride within an organization and foster continued success. Award winning efforts once identified can be used as an opportunity to promulgate energy best practices across the Air Force. Existing awards programs include a mix of individual and group awards within the *White House Closing the Circle Award*, the *Presidential Award for Leadership in Federal Energy Management*, numerous Department of Energy *Federal Energy Management Program Awards*, the *Environmental Protection Agency Climate Protection Award*, the *Air Force Energy Conservation Award* and various MAJCOM and base-level recognition programs. In addition, the Commander-in-Chief's Annual Awards for Installation Excellence uses energy as a criterion to promote energy awareness and to "*Make Energy A Consideration In All We Do*."

Air Force Energy Expenditures

The Air Force spent $6.9 billion for energy in FY07, which is down slightly from the FY06 expenditures of $7.1 billion. Of the 2007 total, 81 percent of the cost is attributed to aviation, 15 percent to facilities and 4 percent to vehicles and ground equipment (see Figure 2-3). Energy consumption across all three energy areas continues to decrease. However, costs are not declining in the same proportion due to high price increases across all energy commodities that outpace efficiency efforts. While the Air Force continues to show leadership

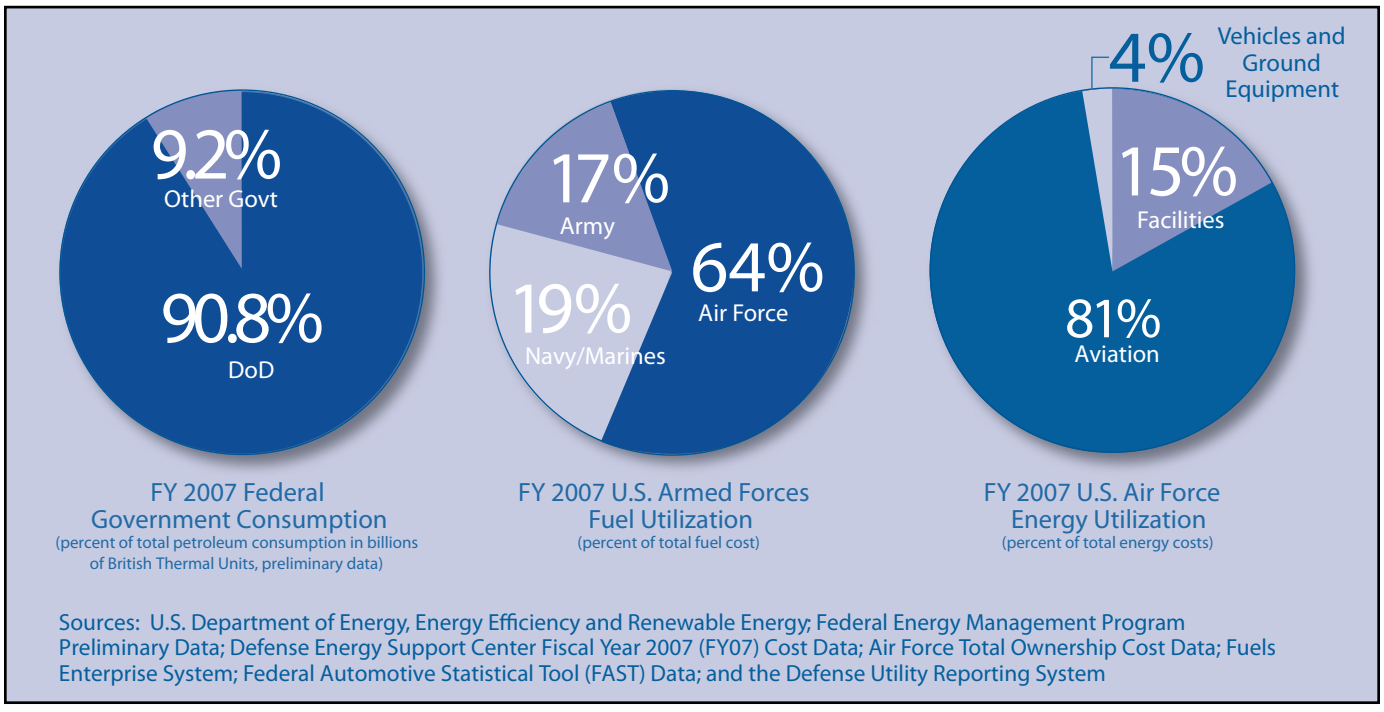


Figure 2-3. Air Force Energy Utilization Relative to Armed Forces and Overall Government

in conservation, efficiency and innovation, it anticipates energy cost increases in FY08 due to the significant rise in market price of jet fuel. Chapter 3 of this report will expand on the Air Force's energy leadership by providing additional details on its energy performance.

For more information on the Air Force Energy Program, refer to the Office of the Deputy Assistant Secretary of the Air Force (Energy, Environment, Safety and Occupational Health) via e-mail at safiee.workflow@pentagon.af.mil or phone at (703) 697-9297.

AF Environmental Management

Air Force Environmental Policy

Over the past two decades, the Air Force has strengthened its programs to address an increasing universe of stringent environmental regulatory standards and EO mandates (see http://www.archives.gov/federal-register/exec-

Figure 2-4. The Air Force EMS Model

utive-orders/). EO 13148, signed in April 2000, required Federal agencies to develop and implement environmental management systems (EMSs) patterned after the International Organization for Standardization 14001 (see Air Force policy memo dated May 29, 2003 for specific information). The objective of this EO was to institutionalize compliance assurance "as a part of doing business" in the execution of Department missions. The long-term goal, originally established through a joint Secretary of the Air Force/Chief of Staff of the Air Force memorandum signed in January 2001, has been to develop an integrated management system as a means of continually improving environmental performance.

Through all this, the Air Force's compliance-based approach—structured around the four environmental "pillars" of compliance, restoration, conservation and pollution prevention—provided an impressive record of responsiveness to regulation, but lacked a consistent alignment with the military mission and strategic mission goals and objectives. The Air Force began to address this need with the implementation and self-declaration of EMSs at appropriate facilities in 2005 with continuous improvement until the present. Figure 2-1 lists the numerous environmental-specific policy directives, instructions and standards issued by Headquarters Air Force.

Air Force installations are using EMSs to proactively identify and respond to environmental concerns. EMS is a set of formal and informal controls used for organizing and managing environmental programs and risks. The impetus behind implementing a formalized EMS is to improve the core business processes of an Air Force installation using environmental improvements and performance to support the overall mission and operations. When properly implemented, the EMS identifies the environmental aspects of the mission, highlights and prioritizes areas of risk, promotes pollution prevention and tracks progress toward environmental goals. An established EMS ensures that activities comply with all legal requirements as well as best management practices, which leverages the continuous improvement cycle (see Figure 2-4).

Civilians, contractors and military personnel each play an important role in properly managing natural resources, helping the Air Force to achieve its mission needs today and in the future.

Air Force Environmental Organizational Responsibilities

Implementing and maintaining a mission-enhancing EMS is everyone's responsibility, from the installation commander to shop-level personnel. Organizational commanders and weapon system single managers are accountable within their span of control. MAJCOMs and installation commanders, working through the installation Environmental, Safety and Occupational Health Councils are accountable for ensuring their installations have implemented effective, integrated and cross-functional EMS programs.

As with other programs, the Air Force EMS and environmental programs are committed to a clearly defined organizational structure and set of formal responsibilities which allow for evolution and reduced dependency on individuals and more dependency on the documented system that has been created. The EMS is largely sustained by the participation and commitment of many installation personnel performing their day-to-day activities in accordance with sound environmental practices.

By leveraging its existing management system elements, the Air Force takes advantage of historical program and process investments, as well as lessons learned in areas such as policy development, training and assessing and reviewing system performance. Further, the Air Force environmental organization incorporates a focus on aligning environmental priorities and activities with mission requirements; assessing opportunities and deficiencies in natural infrastructure capacities and workforce availability; improving EMS knowledge and facilitating the identification of technology, research and development needs; as well as acquisition and procurement integration opportunities.

Air Force Environmental Training and Awareness

Training is a central component to raising awareness and providing the skills necessary to put the Air Force's environmental initiatives into action. Environmental management training and awareness activities encompass major Air Force and DoD Symposia responsible for training thousands of Airmen and colleagues from sister services, environmental graduate programs sponsored through the Air Force Institute of Technology and virtual training classes, such as green procurement training and other media topics, available through the Air Force Web University. To ensure availability and flexibility, the Air Force offers environmental training in a comprehensive range of technical and programmatic topics through a variety of channels, including orientation training, formal classroom curricula, computer-based training and on-line interactive multimedia courses.

Air Force Environmental Monitoring and Follow Up

The Air Force has a long-established (since 1986) environmental audit and corrective action program entitled the Environmental Compliance Assessment and Management Program (ECAMP). The program is established and regulated under AFI 32-7045 and requires periodic assessments of compliance program performance at Air Force installations across all applicable environmental media and topical areas. Within each MAJCOM, management is responsible for evaluating ECAMP findings, taking appropriate corrective actions and following up to ensure that environmental findings and risks have been appropriately addressed.

Air Force environmental monitoring processes also encompass formally established award programs to recognize superior performance and to promote the transfer of technology and best practices throughout the organization. These activities both stimulate positive behaviors throughout our community of Airmen and disseminate leading technologies and management practices in support of operational excellence.

EMS and Natural Infrastructure Management

The Air Force needs to maintain an adequate supply of air and space, and land and water resources (i.e.; natural infrastructure) to test, train and perform diverse missions. Physical resource limitations, increasing local competition for those resources, regulatory restrictions and other encroachment pressures are strain-

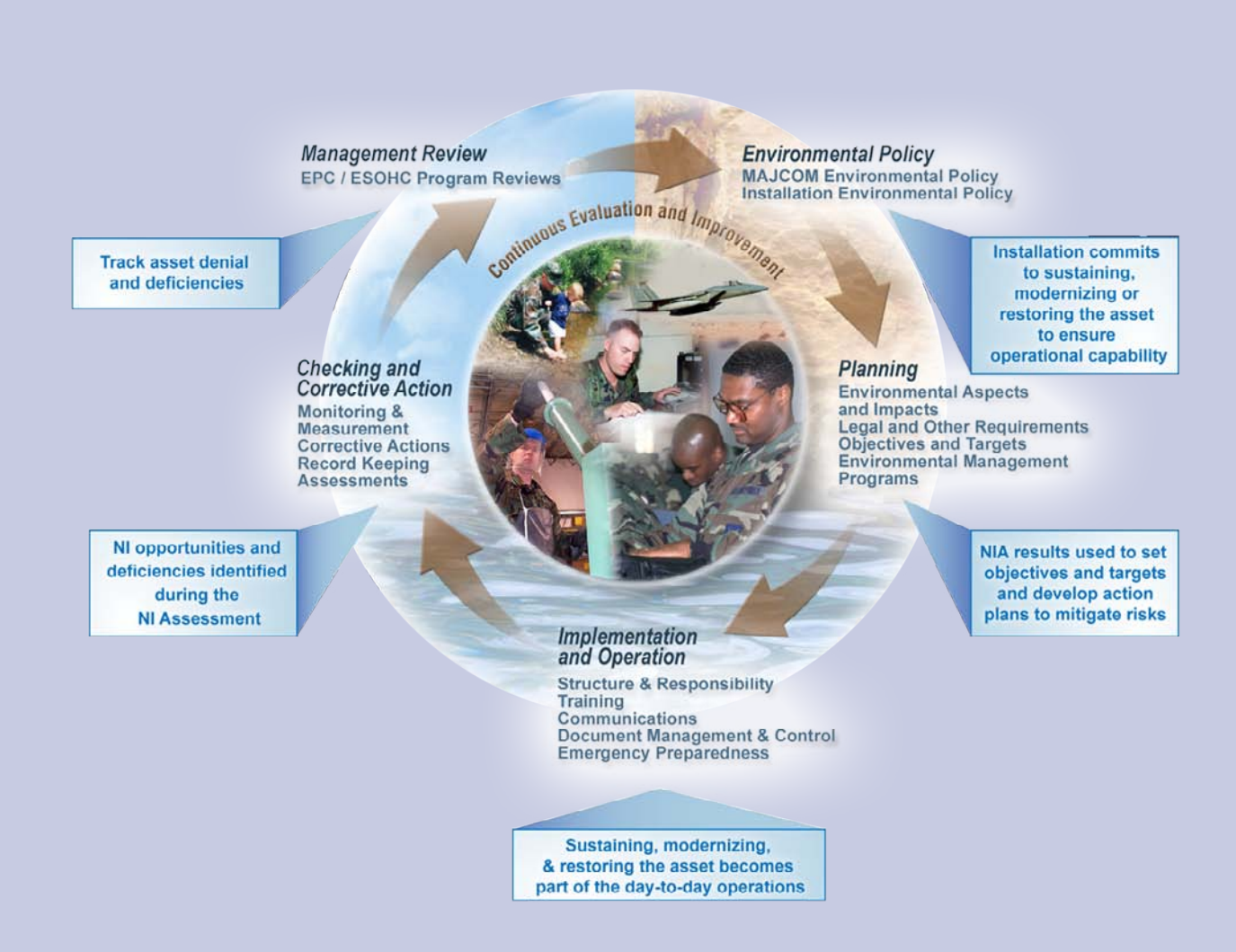


Figure 2-5. How Natural Infrastructure Management Fits into an Installation's EMS

ing the ability to meet current and emerging mission requirements.

At many installations, the natural infrastructure is currently constrained, forcing bases to employ workarounds, accommodate inefficiencies and/or incur added costs to accomplish daily Air Force missions. However, at other locations the natural infrastructure is plentiful and provides moderate or significant opportunities for mission growth. Natural Infrastructure Management (NIM) institutes a holistic management approach that links organizations that control natural infrastructure assets (e.g., emission allowances, frequency spectrum, land training areas, etc.) and focuses management actions toward one common goal—mission sustainment (see the *Air Force NIM Policy Memo* dated January 29, 2008 for more specific information). NIM is a logical complement to the EMS structure. The effective management of air, land and water resources to meet operational requirements includes many of the elements of an EMS.

Air Force Environmental Expenditures

The Air Force proactively moves towards long-term fiscal planning to meet environmental

requirements and accomplish program goals both domestically and abroad. Budget planning is influenced by a variety of factors, including mission sustainability requirements, DoD and Congressional priorities and emerging environmental laws and regulations.

In FY07, the Air Force obligated $923.9 million for environmental programs [Conservation, Environmental Restoration, Base Realignment and Closure, Compliance and Pollution Prevention). Figure 2-6 displays the Air Force environmental budget by program area. The overall budget allowed the Air Force to meet their internal, Federal, state, local and international environmental requirements.

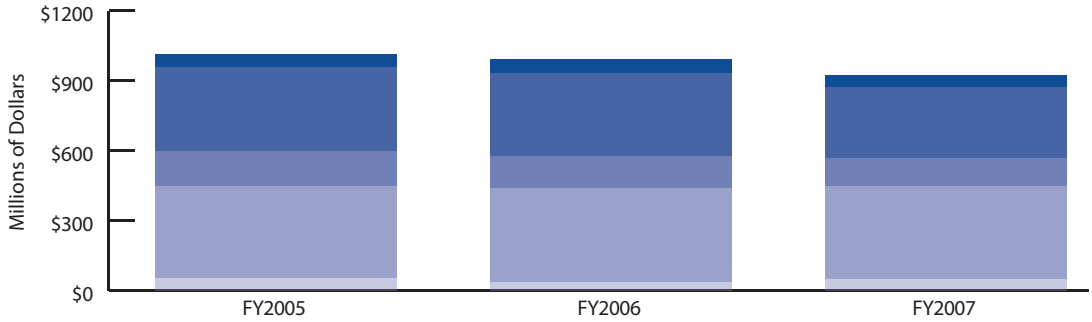
The historical budget appropriation for environmental management has provided valuable monetary resources, supporting the Air Force to meet the needs of applicable laws, regulations, EOs, DoD policies and international standards and plans for natural infrastructure needs to meet mission requirements both today and in the future.

For more information on the Air Force Environmental Program headlines, awareness and advances see *http://www.safie.hq.af.mil/esoh/index.asp*.

Air Force Safety, Occupational, and Environmental Health Management

Historically, the Air Force has had a very strong safety program with strong leadership emphasis on the aviation and weapons arenas. This emphasis has yielded dramatic improvement in their safety performance over the last two decades by reducing aircraft, weapons and ground (occupational, operational and off-duty) safety mishaps and the accompanying loss of personnel.

Air Force Direct Environment Budget by Program Area [1,2]



	FY2005 Actual	FY2006 Actual	FY2007 Actual
Conservation	$54.1	$37.3	$48.9
ER	$396.5	$401.1	$401.5
BRAC	$148.8	$138.5	$118.5
Compliance	$359.3	$356.8	$303.0
Pollution Prevention	$55.6	$57.7	$52.1
Total	$1,014.4	$991.4	$923.9

1 Due to rounding, subtotals may not equal fiscal year totals
2 Subtotals do not reflect Air Force Indirect O&M funds

Figure 2-6. Air Force Budget by Program Area

Chapter 2

The Air Force safety program preserves and enhances combat capability through resource preservation for both Airmen and equipment, which is accomplished by mitigating hazards that could lead to mishaps. It develops, implements and evaluates Air Force aviation, ground, weapons, space and system mishap prevention, policy and nuclear surety programs. It also develops and directs safety education and media programs for all safety disciplines.

The Air Force Occupational and Environmental Health (OEH) program protects the health of Air Force warriors while enhancing combat and operational capabilities. The program is designed to mitigate OEH-related risks and enhance delivery of Air Force Medical System desired effects. The OEH program is a key component of the overall Air Force Safety and OEH program and achieves its success by effective identification and control of OEH hazards. Supervisors and commanders must implement controls to mitigate risks for identified OEH hazards to an acceptable level, ensure risk mitigation will be effected through engineering or administrative controls wherever operationally feasible and ensure appropriate personal protective equipment will be made available and used when adequate engineering controls are not feasible.

Air Force Safety and OEH Policy

The purpose of the Air Force Safety and OEH program is to provide personnel with safe and healthy working conditions, to protect health while enhancing combat and operational capabilities and to mitigate risks. Military and DoD civilian officials at each management level are required to advocate for and demonstrate a leadership commitment to a strong Safety and OEH program that achieves the same conditions through active hazard prevention and control, and provide education and training that will enable these personnel to prevent work-related injuries and illnesses. In addition, every member of the Air Force at all levels has a responsibility to actively participate in their organization's Safety and OEH program. In support of these objectives, the Air Force recognizes applicable standards and governmental legal requirements.

Air Force Safety and OEH Organizational Responsibilities

SAF/IE is the Air Force Designated Agency Safety and Health Officer. The Deputy Assistant Secretary for Energy, Environment, Safety and Occupational Health has program oversight responsibility of all matters pertaining to Safety and OEH programs. The Chief of Safety is the office of primary responsibility for the overall Air Force aviation, weapons and ground safety programs in the Air Force. The Air Force Surgeon General through the Air Force Medical Operations Agency provides the strategic direction and policy to execute the Air Force OEH program. Fire safety is the responsibility of AF/A7C and is implemented through the Installation Civil Engineer. The Air Force Civil Engineer Support Agency oversees instructional guidance on fire protection. Air Force commanders at all levels are responsible for ensuring a safe and healthful working environment for all Air Force Personnel.

Air Force Safety and OEH Training and Awareness

The Air Education and Training Command ensures that job safety, fire prevention and occupational health training are integral parts of Airmen technical training. Under the Headquarters Air Force Safety Center, the Education, Media and Force Development (SEM) Division ensures the continuous professional development of all personnel assigned to safety staffs and/or supporting safety, Air Force-wide. Safety

education and training provides the safety knowledge, skills and abilities to eliminate mishaps through proactive hazard identification and risk management. The education and training encompasses all safety disciplines, including aviation, ground, weapons, space and missiles. The SEM Division provides interactive education and training through on-site classroom course offerings, web-based course offerings, distance learning courses, seminars, work groups, teams and senior leader forums. Additionally, the program provides all Airmen enhanced knowledge of these requirements through the proactive marketing of safety events, issues and concerns through print and visual media such as award-winning magazines, newsletters, videos and commercials.

Air Force Safety and OEH Monitoring and Follow Up

The Air Force has multifaceted internal inspection and monitoring processes to identify, evaluate and mitigate EESOH hazards. These encompass Unit Compliance Inspections (UCIs), Health Services Inspections (HSIs), Logistics Standardization Assessment Team (LSATs), Program Management Evaluations (PME) and the ECAMP. In addition, the Air Force may receive inspections by the Occupational Safety and Health Administration (OSHA) based on complaints from AF civilian employees. These inspections address program areas, such as confined spaces, hazard communication, electrical safety, egress, hearing conservation, personal protective equipment, lock-out/tag-out, training (EESOH), fall protection, machine guarding, walking/working surfaces and management (EESOH). In 2006, the Air Force conducted a total of 85 UCIs, 5 HSIs, 31 LSATs, 31 PMEs (EESOH) and 34 ESOHCAMPs. In addition, the Air Force was inspected 17 times by OSHA during 2006.

The Air Force also has a formal awards program for recognizing and rewarding active duty military and civilian employee contributions to EESOH performance—and their contributions to operational excellence. These recognition processes contribute to the ongoing implementation and enhancement of EESOH program initiatives but also are instrumental in promoting the Air Force ethic of "Taking care of your Wingman" to promote a healthy and productive lifestyle both on and off duty.

Air Force EESOH Expenditures

The Operations and Maintenance appropriation of the Air Force budget is the cornerstone to Air Force readiness and transformation, which includes the safety of its Total Force. Defense Health Program appropriations are available for Occupational and Environmental Health funding. Other sources of funding are also available to support the Air Force EESOH program, such as for medical purposes. Chapter 5 provides additional detail on Air Force EESOH leadership in action.

For more information on the Air Force EESOH Program see *http://www.afsc.af.mil*, and *http://www.sg.af.mil*. ■

Chapter 3

Energy Performance

Chapter 3

Overview and Commitments

As the largest consumer of energy in the Federal government, the Air Force is actively involved in seeking long-term solutions to our nation's energy problems. The Air Force is committed to reducing its demand for energy by increasing energy efficiency through conservation and decreasing usage through individual awareness of the need to reduce our energy consumption. By researching, testing and certifying new technologies—including renewable, alternative and traditional energy sources—the Air Force is actively enabling new domestic sources of supply. The Air Force strives to create a culture where all Airmen make energy a consideration in everything we do, every day and foster communities of innovation that considers energy in all activities and operations.

Figure 3-1 illustrates the three pillars of the Air Force Energy Strategy—Reduce Demand, Increase Supply and Cultural Change—and the relationship to our strategic priorities.

Energy Goals and Objectives

The Air Force's energy strategy supports the Air Force Priorities by balancing demand-side energy efficiency measures with a long-term commitment to supply-side alternative energy sources. The Headquarters Air Force is establishing energy policies and management structures necessary to monitor performance and drive results. Executing this strategy will increase energy security and reduce costs. The Air Force is committed to meeting the various statutory requirements relative to facility and non-tactical vehicle energy consumption and is similarly committed to conserving and seeking alternatives

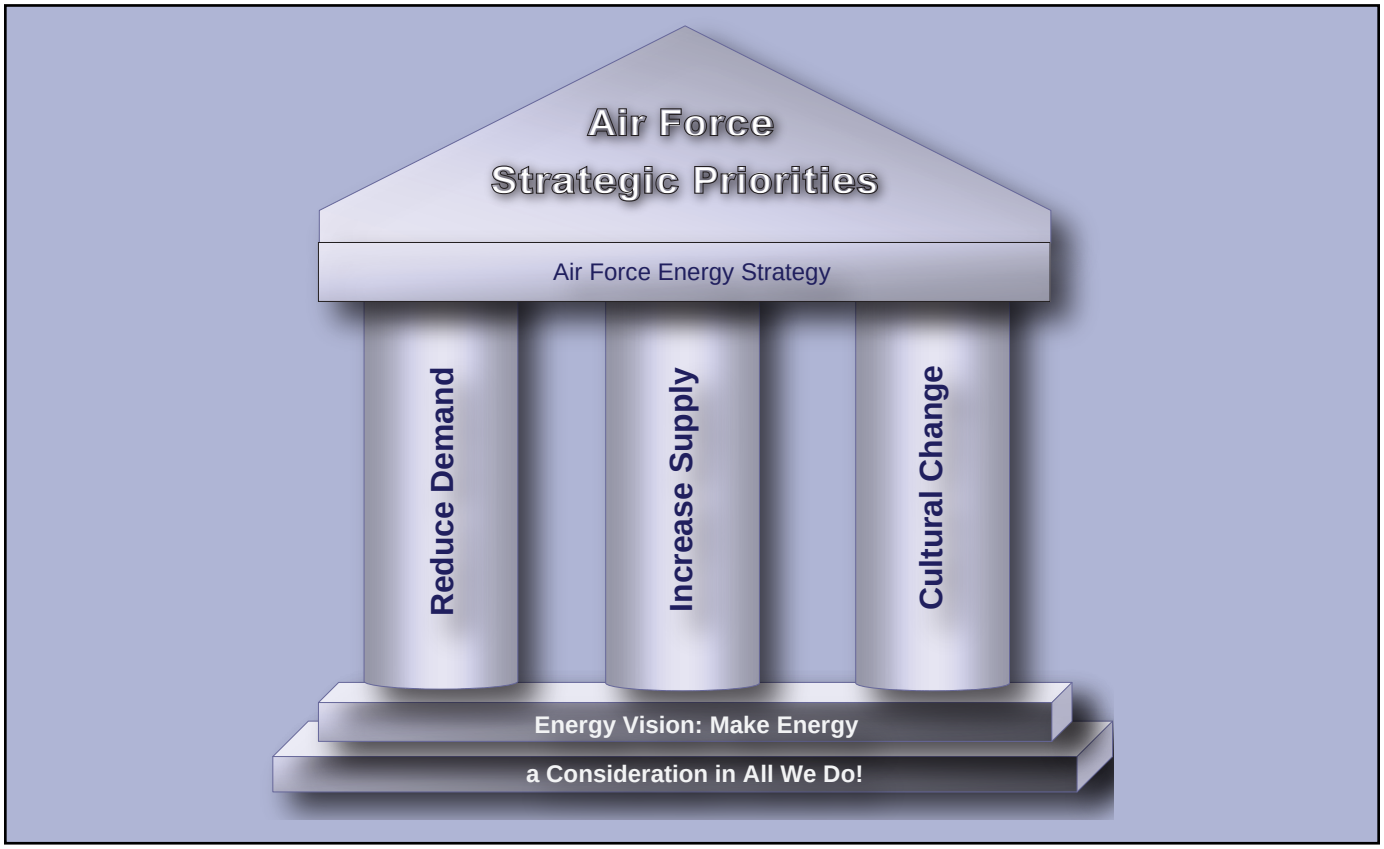


Figure 3-1. Air Force Energy Strategy

Key Air Force Energy Goals		
Focus Area	**Requirement**	**Goals**
Facility Energy	Reduce Energy Consumption (EO 13423)	Starting in FY 07, reduce energy intensity (million BTU/square foot) by 3% per year (against FY03 baseline)
	Meter Facilities to track energy consumption (EPAct05)	Meter all facilities where cost effective by 2012
	Construct Energy Efficient Facilities (EPAct05)	Construct 30% more energy efficient facilities than ASHRAE 90.1 when cost effective
	Increase Use of Renewable Power (EPAct05, EO 13423, 10 USC 2911)	3% by FY07, 5% by FY10, 7.5% by FY13, 25% by FY25 of total electric use
	Air Force Internal Requirement	Beginning in FY09, pursue LEED Silver for Air Force military construction projects
Vehicle Operations	Percent of Light Duty Vehicles acquired that are Alternative Fueled Vehicles (AFVs) (EPAct 1992/2005)	75% of vehicles purchased each year
	Reduce Covered Fossil Fuel Consumption using FY05 as the baseline (EO 13423)	2% beginning in FY06 and continuing through FY15
	Increase Alternative Fuel Consumption Using FY05 as baseline (EO 13423)	Increase 10% per year beginning in FY06 and continuing through FY15
	Replace Light Duty Conventional Vehicle Authorizations with Low Speed Vehicles (LSV) (AFI 23-302)	30% by FY12
Aviation	Air Force Internal Requirement	Certify the entire inventory of aircraft for operations with a 50/50 synthetic fuel blend by 2011 By 2016, be prepared to cost competitively acquire 50% of the Air Force's domestic United States aviation fuel requirement via an alternative fuel blend in which the alternative component is derived from domestic sources produced in a manner that is greener than fuels produced from conventional petroleum

Figure 3-2. Key Air Force Energy Goals

energy sources for its tactical fleet of aircraft, vehicles and ground equipment. A summary of key goals driving Air Force Energy Program priorities and execution is presented in Figure 3-2.

Energy Results

The Air Force is pursuing an aggressive energy strategy. It is committed to meeting the energy goals mandated by the Energy Policy Act of 2005 (EPAct 05), Executive Order (EO) 13423 "*Strengthening Federal Environmental, Energy and Transportation Management*," January 24, 2007 and the new Energy Independence and Security Act of 2007 (December, 2007), as applicable to its facilities and non-tactical vehicle fleets, as well as other laws, regulations and mandates of the President and the Department of Defense (DoD).

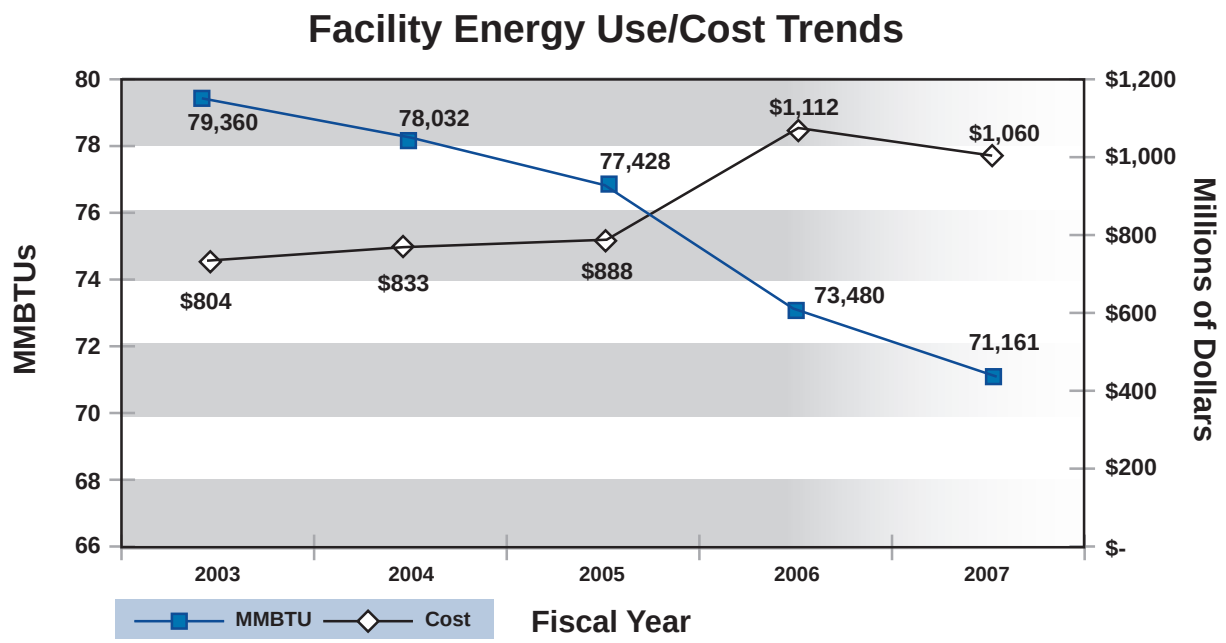


Figure 3-3. Comparison of Air Force Facility Use and Energy Cost Trends

The following sections of this chapter summarize Air Force Energy performance chapter and success stories for each of the focus areas of facility operations, vehicle operations and aviation.

Facility Operations

The Air Force operates and maintains over 700 million square feet of facilities at its 166 major or minor installations around the world. That is more square footage than all Wal-Mart® retail locations across the country. Since 1985, the Air Force has saved 308 trillion British Thermal Units (BTUs) and $2.9 billion through efficiencies in facility energy, without impacting the mission or quality of life of those who work or live on the installations. It should be noted that achieving and sustaining these savings through ongoing conservation efforts is ever more important with rising facility energy costs, as depicted in Figure 3-3.

Facility Energy Intensity Reduction Performance

Using an adjusted Fiscal Year 2003 (FY03) baseline, the Air Force reduced facility energy intensity [measured by BTU per gross square foot] by an overall 17.5 percent from FY03 to FY07, compared to the DoD average reduction of 10.1 percent. The source of the data for Figure 3-4 is the *DoD Annual Energy Management Report*, which provides the 6 percent DoD reduction target for FY07.

To review the full *DoD Annual Energy Management Report*, including Air Force Energy Program accomplishments, see *http://www.acq.osd.mil/ie/irm/Energy/energymgmt_report/fy07/DoD-Narrative-Final.pdf*.

In addition to instituting conservation measures at existing facilities, the Air Force is looking to improve on the energy efficiency and life-cycle cost effectiveness of new facilities. In this regard, 59 out of 110 FY07 Air Force new facility design and construction submissions are at least 30 percent more efficient than required by relevant codes such as the American Society of Heating, Refrigeration and Air-Conditioning Engineers Standard 90.1, Energy Standard for

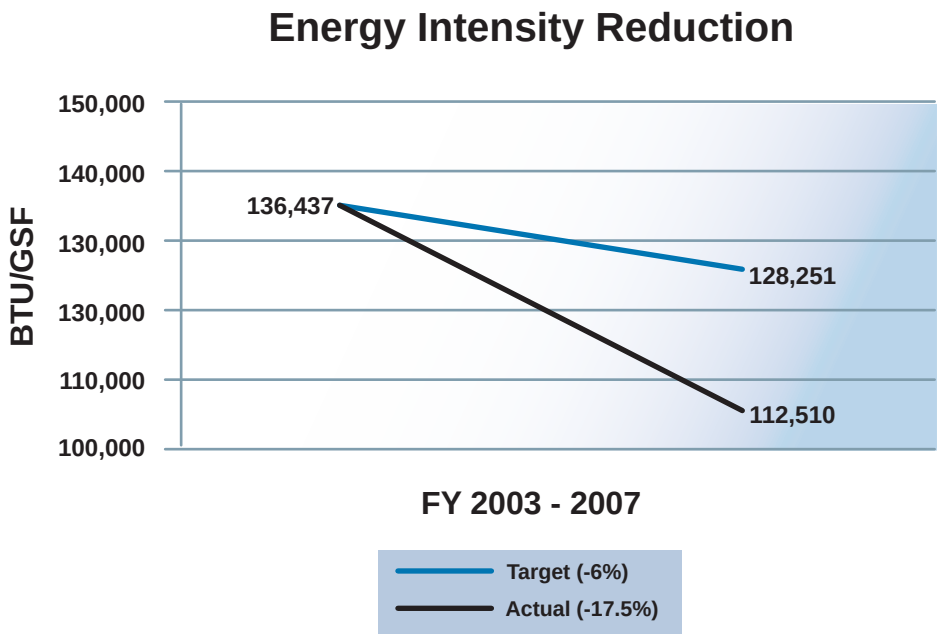


Figure 3-4. Air Force Energy Intensity Reduction during FY 2005-FY 2007

Buildings Except Low-Rise Residential Buildings, or the International Energy Conservation Code.

Additionally, beginning in FY09, 100 percent of each Major Command's (MAJCOM's) military construction vertical construction projects, with climate control, shall be designed so that it is capable of achieving Leadership in Energy and Environmental Design Silver certification.

Renewable Energy

For more than 10 years, the Air Force has been expanding energy conservation efforts and investing in renewable energy sources. Nearly 10 percent of all Air Force electric usage purchases are from renewable sources. By locking in long-term green power contracts at today's fixed prices, the Air Force is helping to ensure reasonably priced utility rates in the future.

The Air Force has been recognized by the Environmental Protection Agency as the top Federal purchaser of green power for the past three years and number three in the United States (U.S.) among both public and private entities (see Figure 3-5). In January 2008, the Air Force's green power purchasing was approximately 900,000 kilowatt-hour (kWh), accounting for 9.5 percent of all its electrical consumption.

Direct versus Indirect Energy Consumption

As defined by GRI protocols, direct energy consumption relates to energy resources combusted or produced on-site for facility use. This includes all liquid fuels, natural gas, on-site generated renewable power, fuel oil, propane, coal and other inputs used for generating facilities energy. Indirect energy consumption relates only to facilities energy and specifically only to energy outputs created off-site. This includes electricity from conventional sources, renewable power (as illustrated in Figure 3-5) purchased off-site and purchased steam. In FY07, direct energy purchases made up 48.8 percent of total facilities energy use as

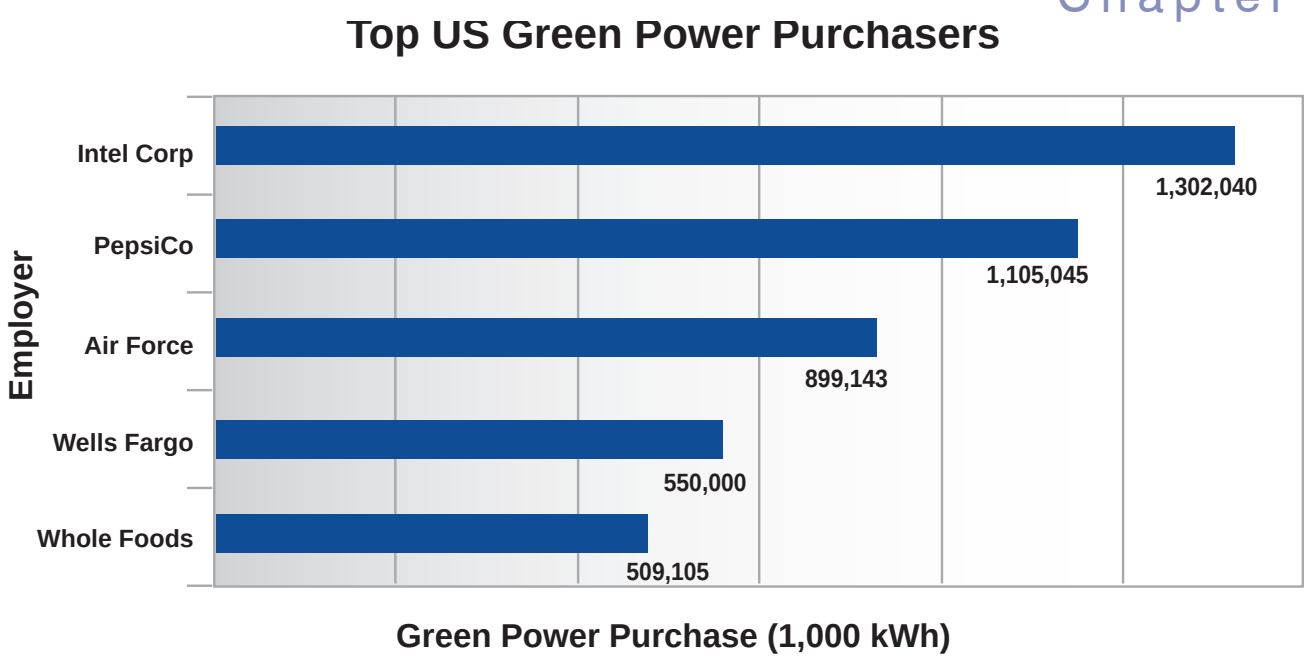


Figure 3-5. Air Force Green Power Purchasers Comparison as of January 8, 2008 (see http://www.epa.gov/greenpower/toplists/top25.htm)

compared to 51.2 percent from indirect sources (see Figure 3-6). The trend between direct versus indirect consumption has remained largely unchanged since 2003.

Success Stories

In order to raise awareness and recognition of its energy leadership, the Air Force participates in external awards and has created several internal awards to promote and reward our top people. Some examples include:

The Air Force's Energy Senior Focus Group won the 2007 *Presidential Award* for Leadership in Federal Energy Management program.

The Air Force participated in the 2007 *Federal Energy and Water Management Awards* program. The Air Force was awarded eight out of thirteen submissions for programs related to

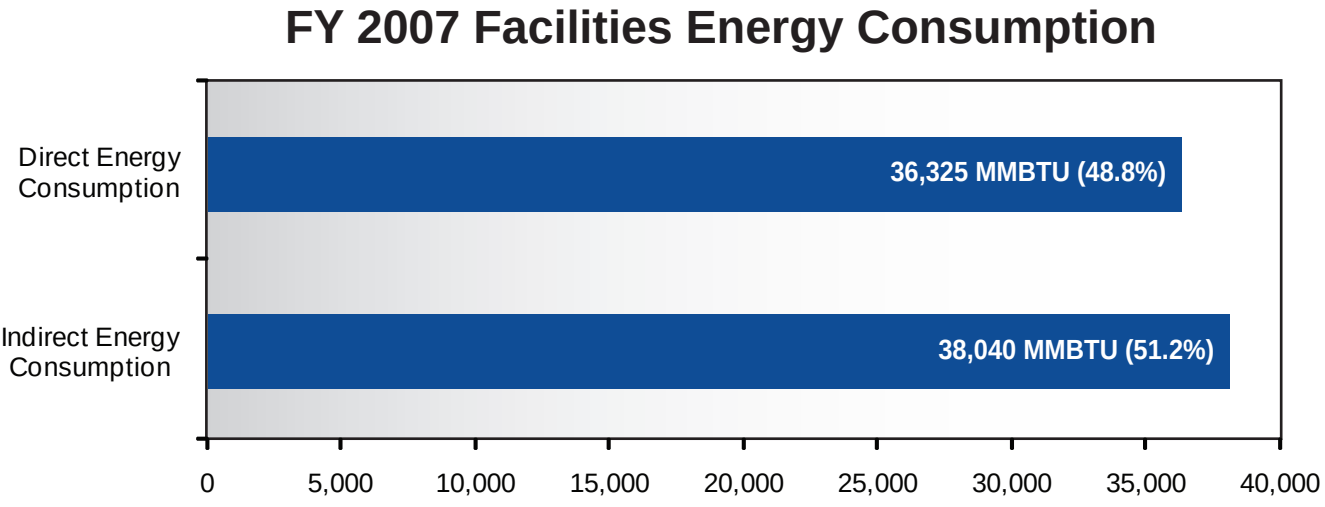


Figure 3-6. Air Force Direct versus Indirect Energy Consumption

various efficiency, conservation and energy development efforts.

The Air Force Reduced Energy Appreciation Program rewards major installations for their ongoing efforts to reduce energy consumption. The winning bases this year were Nellis Air Force Base (AFB), Nevada; Holloman AFB, New Mexico; and Elmendorf AFB, Alaska. These bases reduced their energy consumption by 16.1, 12.0 and 61.2 percent, respectively, from the previous year.

The Air Force's Spring 2007 "You Have the Power" Energy Champion was the Air Force Civil Engineer Support Agency's (AFCESA's) Utility Rates Management Team.

Distributed generation is a practical way to increase the energy supply available for our installations and includes methods such as controlled load shedding, combined cooling, heating and power systems. Some notable examples instituted by Air Force installations throughout the country are:

Lackland AFB, Texas and Randolph AFB, Texas, uses Energy Management Control Systems controlled load shedding program.

Sheppard AFB, Texas, received the *Federal Energy Management Program* award for "No Cost Load Shedding Program" and an annual load reduction program that is implemented during air conditioning season where 50 percent of the lighting is turned off.

Vance AFB, Oklahoma, uses Thermal Energy Storage and an Energy Measurement Control System controlled load shedding program.

Elmendorf AFB, Alaska, uses Distributed Generation, including combined cooling, heating and power systems. The base's former central steam plant and distribution system was elimi-

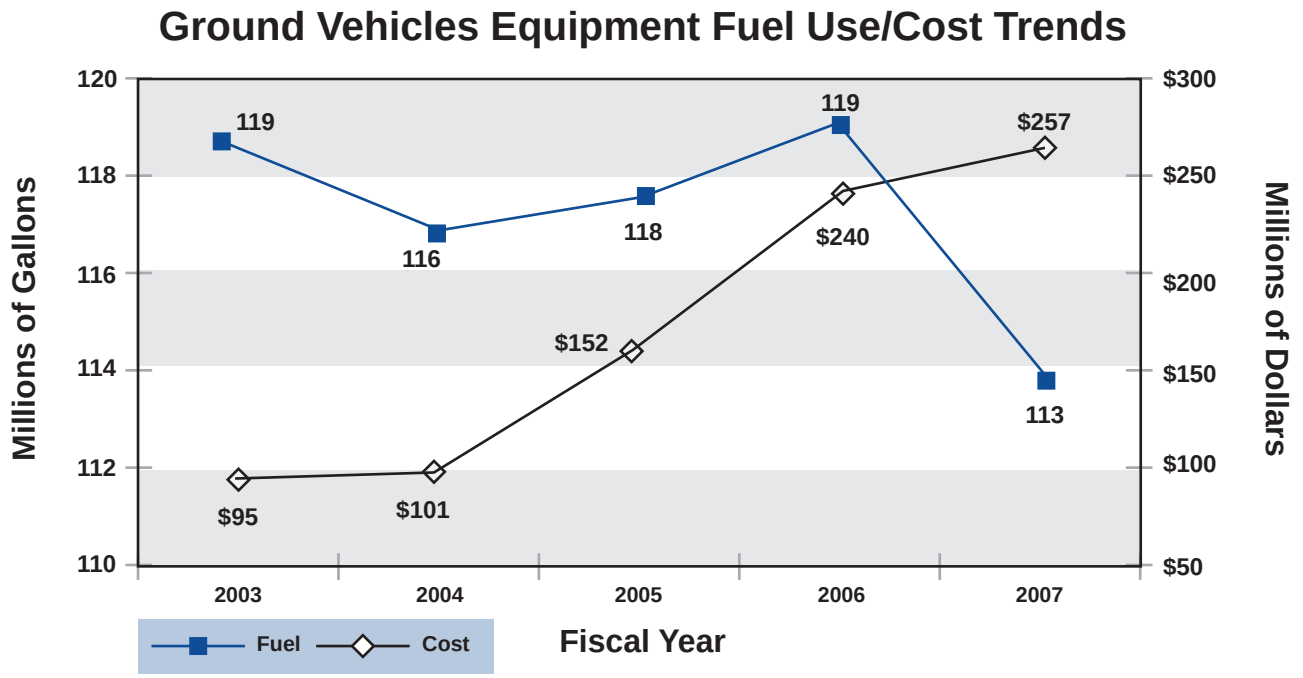


Figure 3-7. Ground Vehicle Fuel Use and Cost Trend Comparison, FY03-FY07

nated and replaced with a 280-boiler distributed heating system in 165 facilities.

The Air Force is actively pursuing public/private partnerships to increase our energy supply options. A significant milestone was achieved in December 2007 as the largest solar photo-voltaic array in the Americas began operation at Nellis AFB, Nevada. The Air Force leased 140 acres to a private entity who built and is operating the array, which produces 14.2 megawatts of electricity. The estimated annual cost savings to the Air Force is $1 million.

The Air Force Center for Engineering and the Environment (AFCEE) recently announced that a new large wind turbine (389 feet high from ground to highest blade tip, with a 1,500-kWh-capacity) will be up and operating within two years, at the southwest corner of the Massachusetts Military Reservation. AFCEE's turbine will reduce their $2.2 million annual electrical cost to power eight groundwater-treatment systems by 30 percent and pay off the turbine's installed cost in about five years. Polluting emissions from fossil-fueled electricity plants currently supplying that amount of electricity will be reduced annually by 6.74 million pounds of carbon dioxide; 11,833 pounds of nitrogen oxides; and 11,443 pounds of sulfur dioxide and other pollutants.

The Air Force continues to pursue a policy that all purchases of computers, printers and copiers will be specified as Energy Star®-compliant as stated in the EPAct05. Since July 2007, the Air Force has purchased approximately 200,000 Energy Star®-compliant computers.

Vehicle Management

Today, more than 86,000 vehicles and thousands of pieces of support equipment are responsible for approximately three percent of all Air Force energy consumption. The Air Force continues to meet its goals by expanding and testing alternative energy sources through the use of hybrid, electric, hydrogen and flex fuel vehicles consuming ethanol in addition to procurement and fielding of low speed vehicles which more than double the average miles per gallon of a conventional vehicle. Given the recent increases in crude oil prices and changing technology prices already being experienced, it is anticipated vehicle-related procurement and energy costs will continue to rise despite our transformation and conservation efforts (see Figure 3-7).

Since 1999, the Air Force reduced fossil fuel consumption for ground vehicles by 15 percent. In FY06, the average fuel economy reached 21.1 miles per gallon (mpg), a 4.1 mpg improvement over the FY05 baseline and realized a 4.4 percent reduction in covered fossil fuel consumption from the FY05 baseline. In addition, the Air Force realized an increase in the consumption of alternative fuels of 7.9 percent in FY06 against the FY05 baseline.

Hybrid vehicles and equipment use both generators and stored energy, such as batteries, to meet peak requirements. Flex fueled vehicles are designed to run on gasoline or ethanol. The Air Force inventory of in-service alternative and flex fuel infrastructure and vehicles includes:

- Over 5,600 flex fuel and hybrid vehicles
- 19 bases currently dispensing ethanol (E-85) with 39 more forecasted in the next five years
- 61 bases currently dispensing B20
- 35 additional locations using available E-85 commercial off installation resources.

Success Story

In FY07 the Air Force used over 420,000 gallons of E-85 and continues to expand the infrastructure with service stations and pumps dispensing E-85.

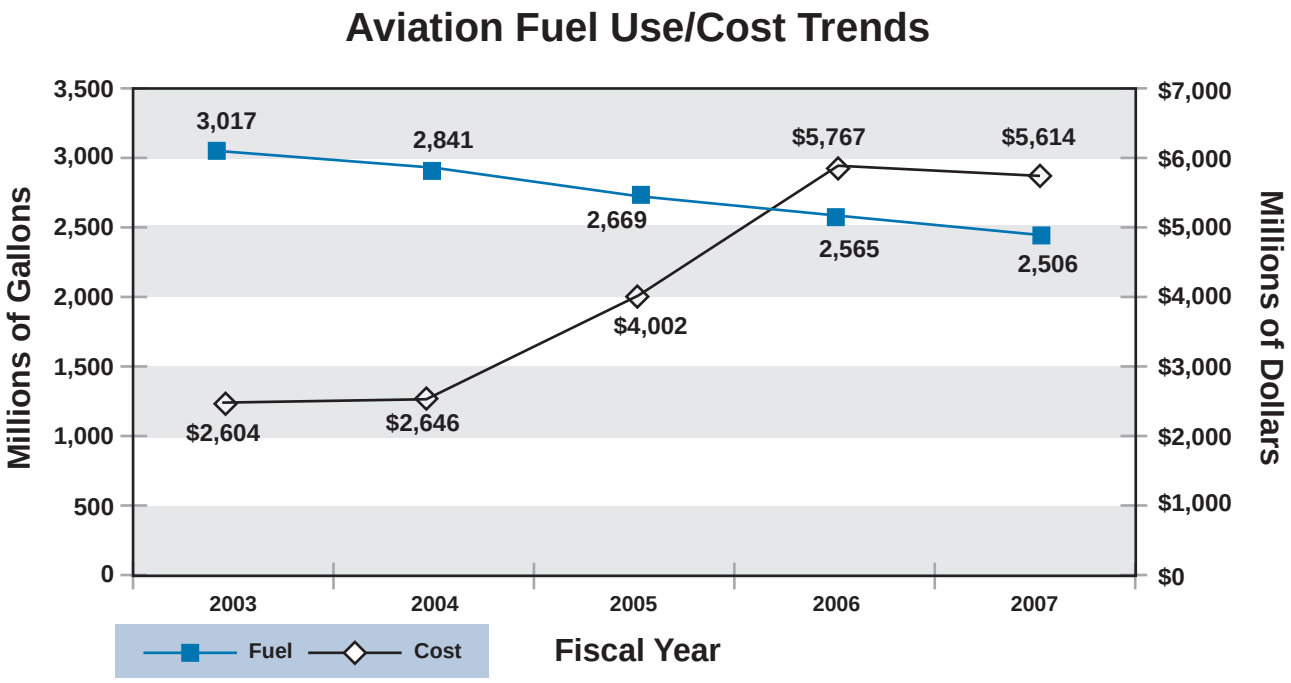


Figure 3-8. Air Force Energy Cost Trend Comparisons

Aviation Operations

In conducting its National Defense missions, the Air Force used approximately 2.5 billion gallons of aviation fuel in 2007. In order to decrease dependence on foreign oil and to ensure its fuel supplies, the Air Force has increased its research, testing and certification of renewable, unconventional and traditional energy sources. The Air Force plans to certify its entire fleet to use a 50/50 blend of alternative and traditional petroleum-based aviation fuel by early 2011. The Air Force also desires by 2016 to be prepared to cost competitively acquire 50% of the Air Force's domestic United States aviation fuel requirement via an alternative fuel blend. It is our intent to derive the alternative component from domestic sources produced in a manner greener than fuels produced from conventional petroleum.

The Air Force sought to identify operationally-enhancing methods to reduce its aviation fuel use, primarily through its Air Force Smart Operations for the 21st Century (AFSO21) initiative. In 2007, the Air Force Deputy Chief of Staff for Operations issued an "Aviation Fuel Optimization Culture" message to all MAJCOMs that directed aircrews and mission planners to manage aviation fuel as a limited commodity and resource, and required fuel optimization consideration throughout all phases of mission planning and execution (see Air Force memo dated March 12, 2007 for specific information). Additionally, the Air Force began analysis of the potential fuels savings by eliminating unnecessary weight on its aircraft, directly routing its missions, and began inclusion of fuel conservation in aircrew training curricula.

The Air Force is making progress in decreasing its use of aviation fuels. However, decreases in energy demand are being offset by even sharper increases in energy costs (see Figure 3-8). For example, for every $10 increase in the market price of a barrel of aviation fuel, the Air Force's aviation fuel costs increase by approximately $600 million. Figure 3-8 represents the total cost for operating the Air Force fleet,

including training, operations and missions for other military services.

Success Stories

In August 2007, the entire B-52 fleet was certified to operate on the synthetic fuel blend.

The Air Force established a Program Management Office for the Synthetic Fuel program on August 20, 2007 and is using the results from the B-52 test and certification process to create a process to expedite fleet certification.

In August 2007, the Air Force partnered with the Department of Energy's National Energy Technology Laboratory to study the technical, environmental and economic issues impacting the feasibility of producing l00,000 barrels per day of jet fuel from coal and biomass. The study found that coal+biomass-to-liquids facilities could cut life-cycle emissions of CO_2, the primary greenhouse gas, by 22 percent compared to conventional petroleum processes with 10 percent switchgrass added to coal feedstock.

Culture Change

The Air Force is committed to instilling energy awareness through focused leadership, energy-specific training and effective communication. We are integrating our aviation, facility and ground equipment energy initiatives to more effectively meet our supply and demand priorities. Air Force leadership is taking an active role in reducing the Air Force energy consumption and in FY07, both the Secretary of the Air Force and the Chief Master Sergeant of the Air Force issued messages to the Air Force communicating the importance of conserving energy and reducing our demand (see Air Force Policy Directive 23-3 for specific information).

The U.S. Air Force Academy is teaching energy conservation and engineering concepts for future officers each year and AFCESA maintains a web-based Energy Savings Performance Contract training program that provides Air Force-wide training for those that need it, such as engineers, contracting staff, legal personnel and comptrollers.

Improving Energy Efficiency is one of ASO21's Five Desired Effects (the others being Productivity, Asset Availability, Agility and Safety), which are designed to help guide initiatives in key areas for process improvement. The AFSO21 public website is *http://www.af.mil/library/eLog21.asp*.

By early 2011, the Air Force will test and certify the entire inventory of aircraft for operations with a 50/50 synthetic fuel blend.

Success Stories

Our efforts have been noticed on an international scale. We are collaborating with our allies and coalition partners on energy management best practices and common issues to ensure an interoperable and sustainable future.

The U.S. Air Force Academy is in the initial phases of developing an Energy Research Center to imbed a culture of energy awareness in the next generation of Air Force officers; proposing to work in close coordination and cooperation with other service academies—U.S. Military Academy, U.S. Naval Academy, Coast Guard Academy, and the Merchant Marine Academy—in recognition of the multi-service nature of the energy problems. ■

Chapter 4

Environmental Performance

Chapter 4

Design of LEED Silver dormitory at Shaw AFB, SC

Overview and Commitments

The Air Force is developing and applying innovative practices within its environmental management programs to ensure safe training, protect the health of military personnel and support the defense mission while also providing for the long-term protection and sustainability of national landmarks, wildlife and lands. Through all this, the Air Force's compliance-based approach is structured around the four environmental "pillars" of conservation, restoration, compliance and pollution prevention (P2). These pillars provide an impressive record of responsiveness to regulation and are aligned with the military mission, and strategic mission goals and objectives.

To achieve mission sustainability and a dominant military advantage, the Air Force requires a substantial resource base. This resource base is comprised of built infrastructure, natural infrastructure and workforce assets that the military needs to conduct testing, training and operational activities. Of special importance to the Air Force is the infrastructure set that supports our test and training ranges. Each of the infrastructures consists of various assets, which collectively support mission capability.

Environmental Goals and Objectives

Air Force environmental programs have a host of well-developed performance objectives, many of which were established to achieve Department of Defense (DoD) goals or to meet requirements contained in Executive Orders (EOs), law or regulation. In addition, the Air Force has established some Air Force-specific environmental goals, designed to serve enterprise management objectives. These program goals have traditionally been aligned under the four environmental pillars to drive performance that assures a continuous state of compliance, brings scheduled activities to successful completion, reduces or eliminates unnecessary or unacceptable risk, and reduces or eliminates the generation of waste. This chapter provides a summary of Air Force performance toward those goals and objectives. It should be noted that to address regional or installation-specific

Key Air Force Environmental Goals		
Focus Area	**Requirement**	**Goals**
Environmental Management Systems	Implement Environmental Management Systems at Appropriate Organizational Levels (EO 13423, DoD Goal)	Achieve full EMS implementation at appropriate facilities by December 2009
Conservation	DoD Requirement	100% of Integrated Natural Resource Management Plans are up-to-date each year
		100% of Integrated Cultural Resource Management Plans are up-to-date each year
Restoration	DoD Requirement, modified by Air Force to accelerate schedule completion by FY12	Achieve remedy in place or response complete (RIP/RC) at all IRP sites at active installations by end of FY12, with the overall goal DoD by 2014
	DoD Requirement	Complete the preliminary assessments for all MMRP sites by end of FY07
		Complete site inspections for all MMRP sites by end of FY10
		Achieve RIP/RC at all IRP sites at Legacy BRAC installations by FY15
		Achieve RIP/RC at all MMRP sites at Legacy BRAC installations by FY09
		Achieve RIP/RC at all IRP at BRAC 2005 installations by FY10
		Achieve RIP/RC at all MMRP sites at BRAC 2005 installations by FY10
Compliance	DoD Requirement	100% of DoD population is served by public water systems meeting all established drinking water requirements each calendar year
		100% of DoD water pollution control permits are in compliance with applicable requirements
	Air Force Internal Requirement	No more than 31 new enforcement actions (EAs) per year; 45 day resolution period
Pollution Prevention	DoD Requirement	Achieve a 40% diversion rate for nonhazardous solid waste (not including Construction and Demolition debris) by December 2010
		Achieve a 50% diversion rate for Construction and Demolition debris by December 2010
Ranges, See Range inputs and EMR	DoD Requirement	Complete an assessment of all operational ranges by 2008.

Figure 4-1. Key Air Force Environmental Goals

management needs, or as a desired outcome of installation's EMS, some Air Force installations and major commands (MAJCOMs) have developed additional performance objectives and goals; MAJCOM and installation-specific goals, objectives and targets are not included in this enterprise-level report.

A summary of key goals driving Air Force Environmental Program priorities and execution is presented in Figure 4-1. Subsequently, Air Force performance results and success stories are discussed against the four program pillars. Results described in this section are based on program performance during the period of Fiscal Year 2005 (FY05) through FY07, except where data limitations, legal requirements, or reporting cycle differences require reporting on a calendar year basis or for a limited performance period. The majority of the information presented in this report is summarized and available for review in the DoD Annual Environmental Report to Congress (FY05 through FY07) and can be accessed at: *https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC/FY2007*.

Environmental Results

Conservation Pillar

Because of the utilization of land and air spaces, the Air Force and all DoD installations have a responsibility to protect, enhance and maintain the natural and cultural resources located within fence lines. The Air Force works with a variety of government and non-government organizations to accomplish these goals and ultimately best utilize over 9 million acres of land.

In FY07, the Air Force obligated $48.9 million for its conservation program, as shown in Figure 4-2. This was a substantial increase from the FY06 overall obligation due to the inclusion in FY07 of manpower and associated education and training costs. Some $34.6 million was invested in recurring costs including those constant activities involving the management of critical resources and $14.3 million was allocated to nonrecurring costs, for groundbreaking natural and cultural projects. Some of the most innovative projects are described in this section.

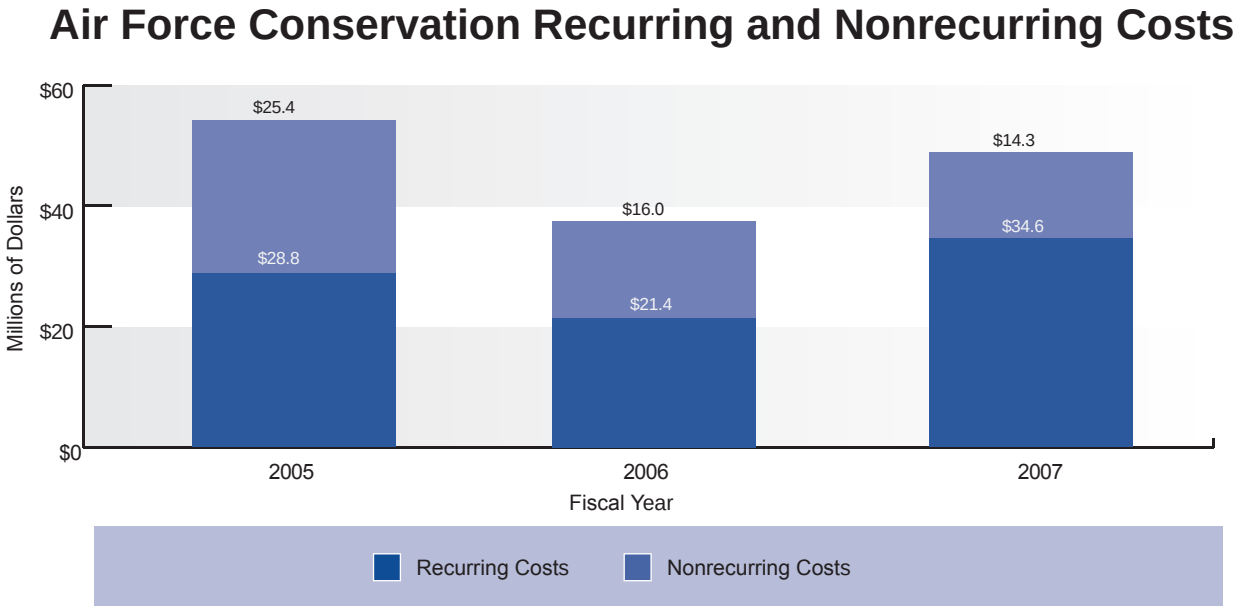


Figure 4-2. Air Force Conservation Recurring and Nonrecurring Costs

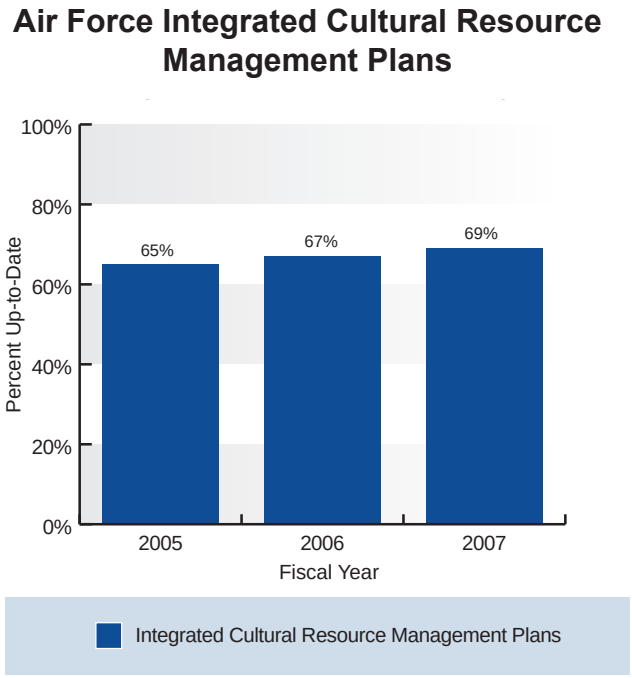


Figure 4-3. Status of Air Force ICRMPs

Cultural Resource Management

Management of cultural resources is an integral part of the Air Force mission. The Cultural Resources Management Program strives to balance managing and preserving the important historic and prehistoric heritage of the United States in concert with the military mission. The Air Force protects a variety of cultural resources including historic properties, cultural items, archaeological resources and Native American sacred sites. Resources are managed through the development and implementation of Integrated Cultural Resource Management Plans (ICRMPs) [see Air Force Instruction (AFI) 32-7065 for more specific information]. Sixty-nine percent of the 118 required ICRMPs at Air Force installations were approved and up-to-date in FY07, representing a consistent trend in overall progress since FY05 (67 percent approved and up-to-date in FY06, 65 percent approved and up-to-date in FY05), as depicted in Figure 4-3.

Success Story

In 2007, Elmendorf Air Force Base (AFB) in Alaska, was awarded both the *General Thomas D. White Cultural Resources Management Award* (All Installations) and the *Secretary of Defense Environmental Award* for exceeding the normal requirements to inventory, nominate and protect cultural resources, and promote cultural resource awareness. Elmendorf AFB employs a unique "living history" approach to their cultural resources evaluations. Among their accomplishments was the inclusion of native elder speakers in the beddown ceremony of Elmendorf's first C-17 and the incorporation of cultural resources into their Environmental Management System (EMS).

Natural Resource Management

The challenge facing the Air Force in managing approximately 9 million acres of land is balancing the sometimes divergent goals of mission sustainment with the conservation of natural biologic diversity on installation property. The Air Force protects the natural assets located on or near its installations through its Natural Resource Program. The chief tool for managing installation ecosystems is the Integrated Natural Resource Management Plans (INRMPs) on all Air Force property (see AFI32-7064 for specific information). Based on an interdisciplinary approach to ecosystem management, the INRMP ensures the successful accomplishment of the military mission by integrating all aspects of natural resources management with each other and the rest of the installation's mission.

The Air Force obligated $29.1 million in FY07 to fund INRMPs. As shown in Figure 4-4, 72 percent of Air Force installations requiring INRMPs had up-to-date and approved plans in FY07, down from FY06 (84 percent) and FY05 (80 percent).

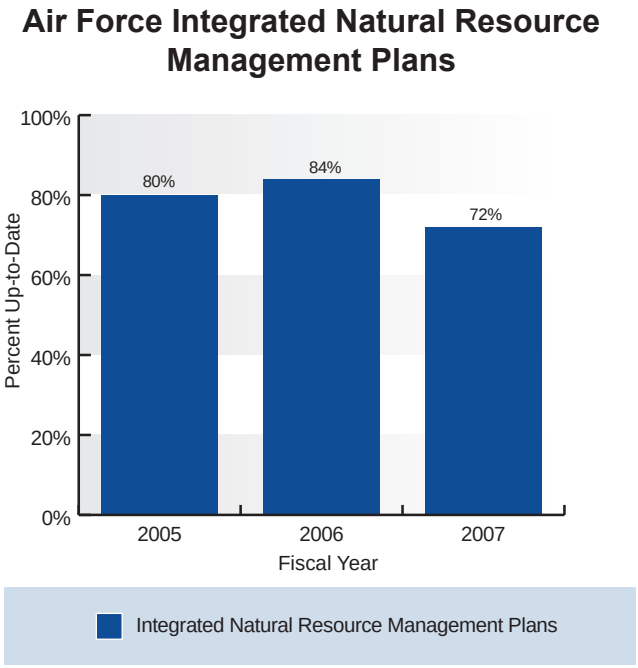


Figure 4-4. Status of Air Force INRMPs

Success Story

Hurlburt Field, Florida, won the 2007 *General Thomas D. White Natural Resources Conservation Award (Individual/Team Excellence)* by, among other successes, utilizing low-cost alternatives to recreational use that pay big dividends. Hurlburt enlisted Eagle Scouts to assist in the completion of various projects, including the installation of fish attractors. Hurlburt also worked to repair a boat ramp and restore access to a popular fishing pond for recreational use.

Restoration Pillar

The Air Force has established an aggressive internal goal to have all cleanup remedies in place at all active installations by the end of 2012, two years ahead of current DoD goals. The Air Force is proactively working with the Environmental Protection Agency (EPA) to meet this goal. Strong partnerships with community members, Native American tribes, states and other Federal agencies are vital to the success of the Air Force's environmental restoration program.

Funds for restoration projects come either from the Environmental Restoration or Base Realignment and Closure (BRAC) accounts. The BRAC account funds restoration at BRAC installations. These accounts in turn fund the Installation Restoration Program (IRP) and Military Munitions Response Program (MMRP). The IRP includes hazardous or low-level radioactive waste projects, while the MMRP includes response to actions to address munitions and explosives of concern as well as munitions constituents. By the end of FY07, 98 percent of all high relative-risk IRP sites had reduced risk and 100 percent of active MMRP sites had successfully completed preliminary assessments.

In FY07, the Air Force obligated $509.6 million for installation activities with allocations of $401.5 million and $108.1 million for active and BRAC installations, respectively. The Air Force plans to increase the overall restoration budget by about $50 million annually through FY09 in order to continue progress to cleanup phases. Of the overall FY07 BRAC budget, the Air Force allocated about 69 percent to cleanup activities. In FY08 and beyond, the Air Force will focus efforts on a strategy to optimize property transfer, reduce long-term costs and protect human health and the environment.

Success Stories

Among their many restoration accomplishments was Patrick AFB's great strides in identifying and investigating contaminated sites. Over $4 million in Air Force savings can be attributed to identification of contaminated sites requiring no further action. Patrick AFB also cleaned up and disposed of 58,000 tons of Polychlorinated biphenyl (PCB)-laden soils from two former launch complexes. This accomplishment lead to their success in receiving the 2007 *General Thomas D. White Restoration Award (Individual/Team Excellence)*.

In 2007, Seymour Johnson AFB, North Carolina, was presented with both the *General Thomas D. White Restoration Award (All Installations)* and the *Secretary of Defense Restoration Award* for cleaning up 16 sites on a fast track schedule 5 years ahead of the DoD scheduled goal.

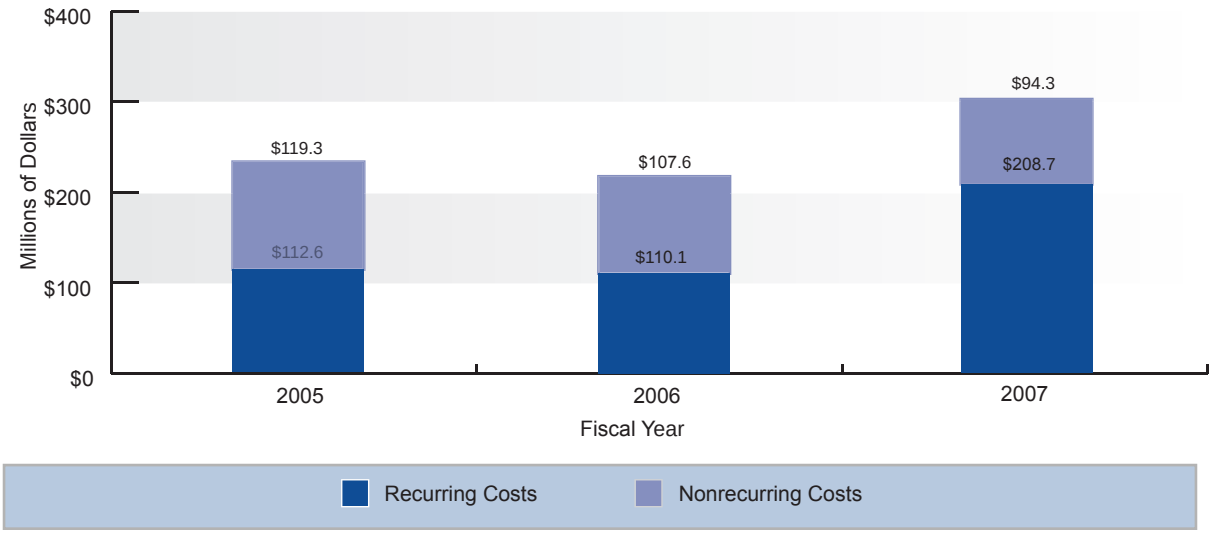
Compliance Pillar

The Air Force is committed to creating more effective communication channels with regulators and regional environmental offices to ensure compliance programs are meeting or exceeding internal and DoD goals (see Figure 2-1 for more information). The Air Force compliance budget includes funds to comply with Federal, state and local environmental laws. As Figure 4-5 illustrates, the Air Force allocated $303.0 million in FY07 to compliance projects, including $208.7 million for recurring, or relatively constant costs such as routine sampling and analysis of discharge to air and water; $94.3 million of the budget was allocated for non-recurring costs, including projects to upgrade wastewater treatment facilities or to install air pollution controls.

Air Quality

The commitment of the Air Force Air Quality Program is to protect public health, the Air Force workforce and the environment from harmful pollutants while sustaining its mission. The amount of pollution that is emitted from the installation and the amount of pollution in the region can affect the installation's ability to complete its mission. The Air Force works diligently to balance these commitments by reporting air pollutants from base sources and also implementing new technologies to prevent or reduce air emissions.

Air Force Compliance Recurring and Nonrecurring Costs [1,2]



1 Recurring costs include Manpower, Education and Training
2 Due to rounding, subtotals may not equal fiscal year totals

Figure 4-5. Air Force Compliance Recurring and Nonrecurring Costs

Common sources of air pollutants at Air Force installations include boilers, incinerators, fuel storage and transportation, parts cleaning, surface coating operations and aircraft operations. The Air Force actively works to identify opportunities to reduce impacts to air quality, from "banking" air emission credits with other entities in the region, to purchasing modern and more efficient equipment that could reduce the amount of emitted pollutants.

Success Story

Air quality is a significant concern at Columbus AFB Mississippi, the busiest flying wing in the Air Force. In 2007, the base reduced regulated air emissions by 12 percent, thereby expanding the base's ability to accommodate future mission growth by operating well below permitted air emission levels. This accomplishment, among others, led to Columbus AFB winning the 2007 *General Thomas D. White Environmental Award (Non-Industrial Installations)* for environmental quality.

The 153 Airlift Wing in Cheyenne, Wyoming received the *General Thomas D. White Environmental Award (Reserve Component including Air National Guard)* for complying with National Environmental Policy Act and other environmental directives, implementing required environmental protection plans, eliminating environmental violations, cleaning up contaminated sites and minimizing hazardous waste along with other community-based programs.

Water Quality

Water quality is important to the Air Force as it impacts the availability of drinking water and is subject to regulation and enforcement by local, state and Federal government agencies. The Air Force effectively manages its water resources, provides safe drinking water to its personnel and their families and returns clean water to the environment. Operations have impacted water quality in the past and an understanding of water quality basics is important to current efforts to remediate those impacts and prevent negative impacts from current and future operations.

Overall, the Air Force uses about 38 billion gallons of drinkable water per year and recycles over 583 million gallons. The program provides safe water to nearly one million people annually, including families that live in military housing. Maintaining compliance with water regulations is a serious Air Force commitment. As shown in Figure 4-6, in FY07, 94 percent of its 393 water pollution control permits were in compliance with discharge limits and other conditions. In FY07, the Air Force was also able to deliver drinking water to 940,000 people across the world as shown in Figure 4-7.

Success Story

In 2007, Hill AFB's 75 Environmental

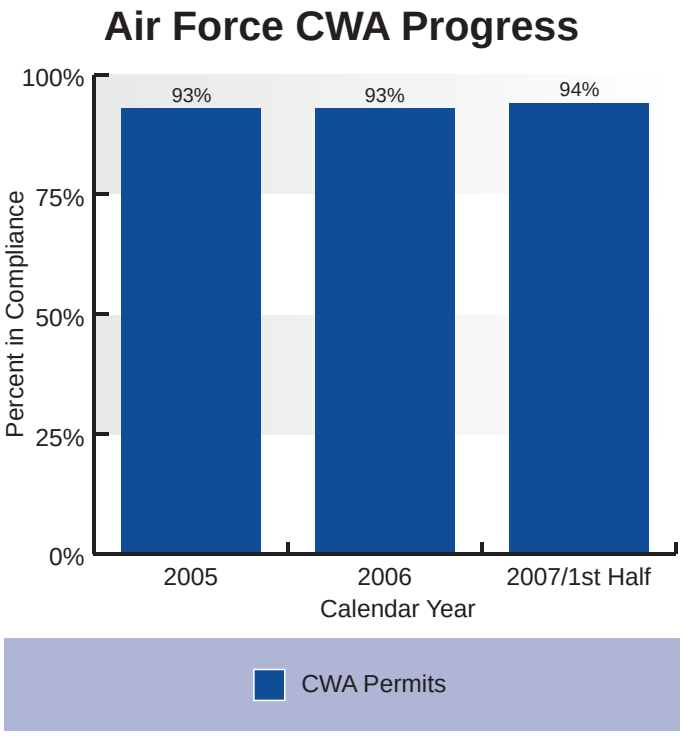
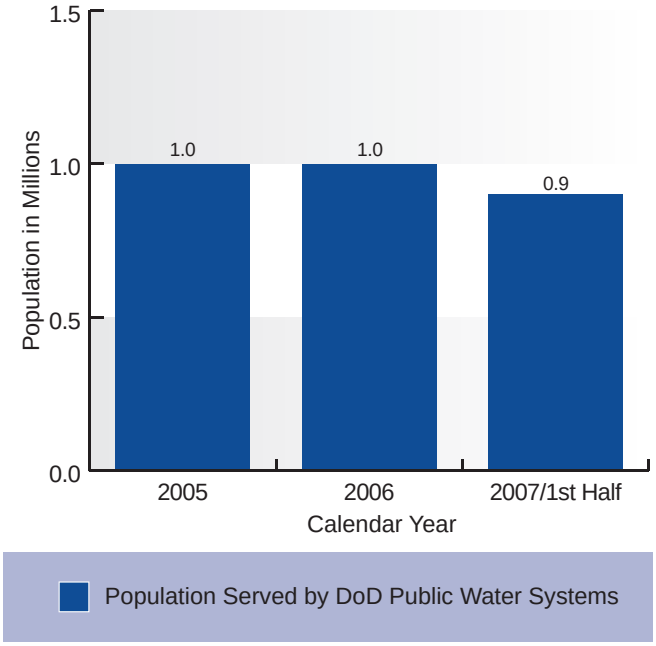


Figure 4-6. Air Force Clean Water Act (CWA) Progress

Air Force Drinking Water Progress



Figures 4-7. Air Force Drinking Water Progress

Quality Team was awarded the *General Thomas D. White Environmental Quality Award (Individual/Team Excellence)* and the *Secretary of Defense Environmental Quality Award* for their significant environmental accomplishments, including a tremendous cost savings in their wastewater treatment systems. The team re-routed open surface drainage systems to reduce stormwater influx to the industrial wastewater treatment plant by 95 percent, thus reducing the potential for unintentional discharge into the local sanitary sewer and decreasing treatment costs by $250,000.

Enforcement Actions

The Air Force makes a strong financial and personnel commitment each year to comply with Federal, state and local environmental applicable statutes, regulations and other applicable requirements. Despite these efforts, enforcement actions continue to take place. Root causes of these enforcement actions include lack of adequate management oversight and improper execution by personnel, primarily as a result of insufficient training (identified as the main reason for 80 percent of recent enforcement actions).

In FY07, new compliance enforcement actions filed against the Air Force, under the Clean Air Act and Clean Water Act, decreased slightly. As is shown in Figure 4-8, of the open compliance enforcement actions, 44 were administrative or operational and 6 were project-related; 41 enforcement actions were closed. Figure 4-9 illustrates an increase in Federal and local fines assessed against the Air Force from FY06 to FY07, while state fines decreased substantially in FY07.

The Air Force is working to track Notices of Violation more closely and strengthen lines of communication with regulators and regional environmental offices to ensure enforcement actions are closed and documented.

Air Force Enforcement Actions

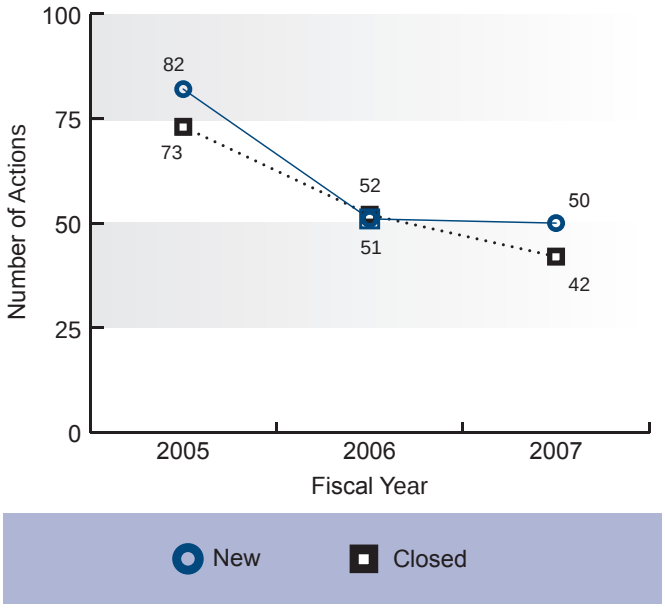
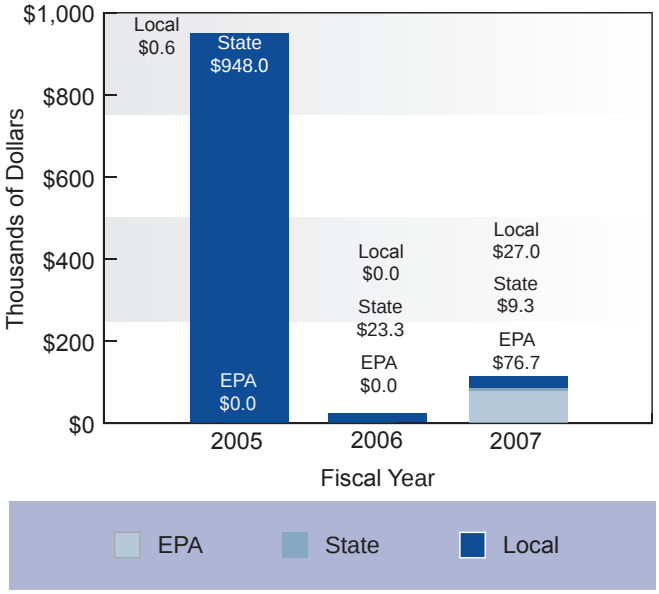


Figure 4-8. Air Force Enforcement Actions

Air Force Fines Assessed[1]



[1] *Due to rounding subtotals may not equal fiscal year totals*

Figure 4-9. Air Force Fines Assessed

Pollution Prevention Pillar

P2 remains an important and integral component of the Air Force's environmental program. P2 management is subject to the installation's overarching EMS framework (as discussed in Chapter 2) where it becomes a major consideration to ensure the installation's objectives and targets are met. The P2 program aggressively targets both hazardous and non-hazardous waste through waste reduction, elimination and recycling programs, material substitution and process change. The program also focuses on reductions in hazardous materials, hazardous waste, air emissions, Ozone Depleting Substances (ODS) and solid waste.

The Air Force P2 program includes funds to reduce health and safety risks at or near its installations. In FY07, the Air Force invested $52.1 million in P2 activities. Nonrecurring costs were decreased, as shown in Figure 4-10, from FY06 to FY07 as a result of the completion of some one-time projects. The Air Force continues to emphasize P2 as the preferred approach to achieving environmental compliance.

Success Stories

Robins AFB is an Air Force leader in P2. Their reduction efforts, which are aligned to their EMS objectives and targets, have resulted in significant overall cost savings. In 2007, their

Air Force Pollution Prevention Recurring and Nonrecurring Costs [1,2]

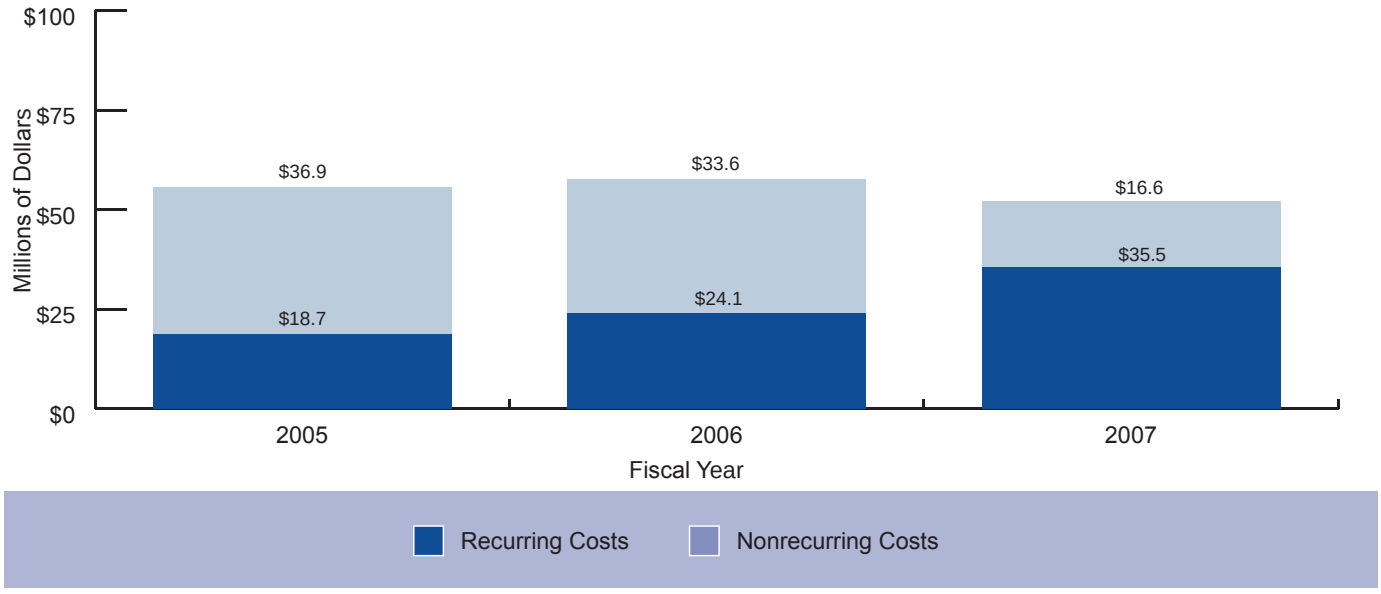


Figure 4-10. Air Force Pollution Prevention Recurring and Nonrecurring Costs

outstanding achievements lead to their receipt of the *General Thomas D. White Pollution Prevention Award (Industrial Installations)* and the *Secretary of Defense Pollution Prevention Award*. Among notable successes were the construction of a paint/depaint hangar with innovative air recirculation that provides energy savings of about $2 million per year, robust recycling programs resulting in $1.3 million in savings by diverting solid waste from landfills and $230,000 of savings by composting 100 percent of yard waste.

Solid and Hazardous Waste

The Air Force continues to promote compliance with state regulations for the proper handling of solid and hazardous wastes. Each year, the Air Force shows its commitment by diverting tons of non-hazardous solid waste from landfills, recycling wastes that could potentially be hazardous and preventing waste at its source through green purchasing.

In FY07, the Air Force had an overall solid waste diversion rate of 62 percent, shown in Figure 4-11. This effective diversion of waste from landfills and incinerators has resulted in a disposal cost savings of over $45 million.

Hazardous waste disposal has also seen notable results. Since 1996, the Air Force has successfully reduced hazardous waste disposal by 33 percent overall. Figure 4-12 illustrates progress on managing hazardous waste disposal rates and associated potential environmental liabilities.

Success Story

Vandenberg AFB, California, won the 2008 *White House Closing the Circle Award* for their "Moving Mountains of Waste" program. Vandenberg AFB exceeded state and Air Force diversion requirements and implemented P2 efforts generating $24.5 million cost avoidance in the last five years. The base is keeping the landfill a viable asset to the Vandenberg AFB mission through innovative waste/P2 programs.

Green Procurement

In August 2004, the DoD broadened the focus of green purchasing by issuing a new policy for the Green Procurement Program (GPP)

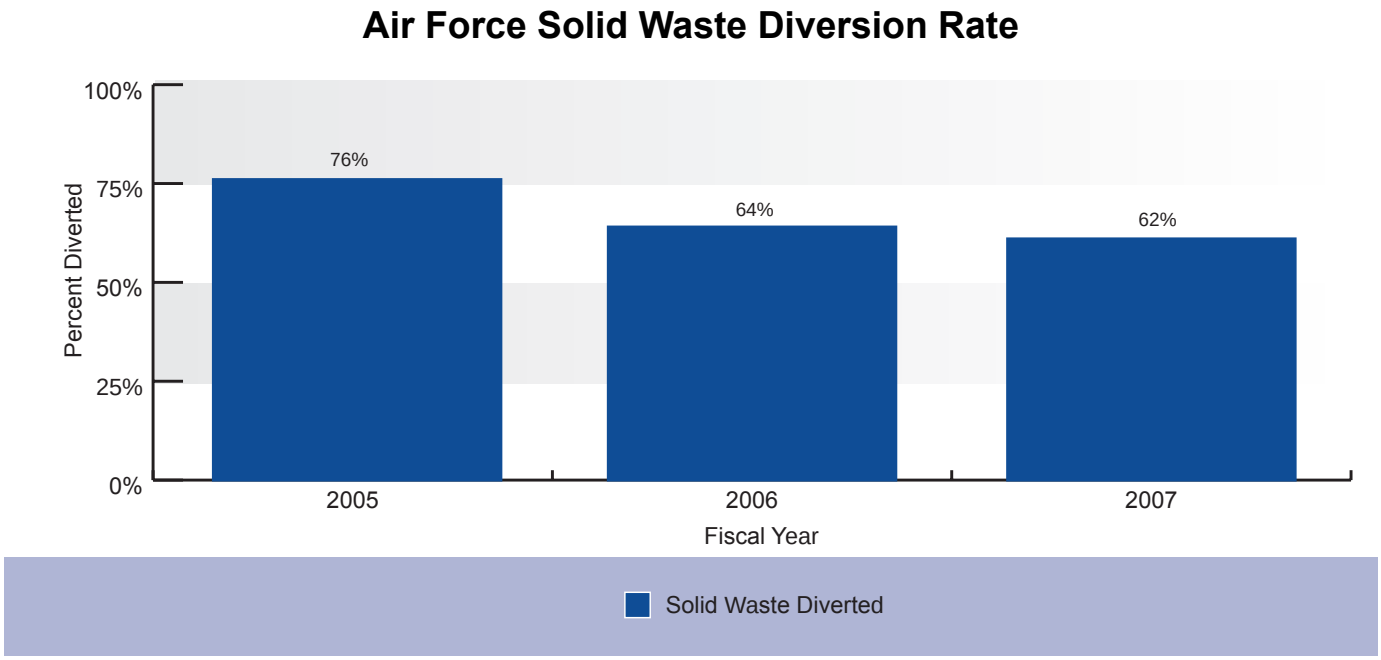


Figure 4-11. Air Force Solid Waste Diversion Rate

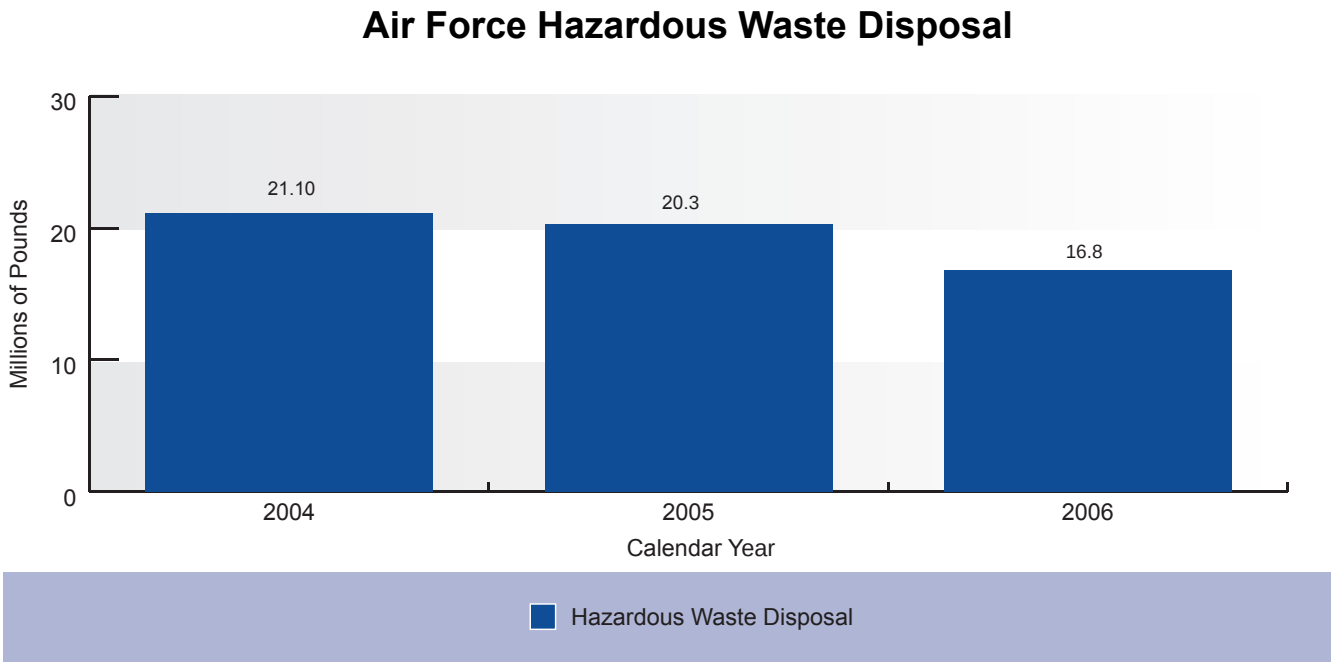


Figure 4-12. Air Force Hazardous Waste Disposal

(see Air Force policy memo dated September 26, 2006 for more specific information). GPP requirements apply to all purchases of products and services by Air Force personnel and their contractors, no matter how they are purchased or the dollar value of the purchase. The Air Force is committed to becoming a leader in green procurement.

The complete list of GPP elements includes:

- Recovered materials
- Bio-based products
- Energy and water efficient products
- Non-ozone depleting substances
- Priority chemicals
- Environmentally preferable products

Success Story

Fairchild AFB's Environmental Management Subcommittee has achieved significant accomplishments in their green procurement program acquisitions. Acquisitions at Fairchild consider environmental, safety and occupational health elements. The subcommittee has helped the base achieve a fully implemented GPP and write a new plan that provides direction for incorporating green procurement into all forms of base acquisitions. In 2007, they won the *General Thomas D. White Pollution Prevention Acquisition Award (Individual/Team Excellence)* and the *Secretary of Defense Environmental Award* for their efforts.

Ozone-Depleting Substances

As part of its worldwide leadership role, the Air Force led early government and industry efforts to identify alternatives for aviation halon applications (see DoD requirements for more specific information). During the 1990s, the Air Force spent more than $500 million re-engineering processes, systems and equipment at installations worldwide to eliminate over 96 percent of its original annual Class I ODS usage.

To support the fraction of mission critical Class

I ODS applications that remain in use, the Air Force relies on a banking approach that stresses recycling and re-use and that has kept purchases of new-production ODS to an absolute minimum. For instance, more than 80 percent of the halon the Air Force has banked for mission-critical wartime and peacetime aviation fire suppression requirements has come from decommissioned facility fire suppression systems and extinguishers or has been recycled from aircraft. Less than 20 percent of the Air Force halon bank is new-production halon and all of that halon was purchased before 1994.

Success Story

In 2007, the Air Force received two *Best-of-the-Best Stratospheric Ozone Protection Awards*. The EPA presented these awards in Montreal, Canada during the 20th Anniversary of the signing of the Montreal Protocol, considered as one of the most successful environmental treaties of all time. The Department of the Air Force received one award for its 20-year leadership in stratospheric ozone protection. In addition, the Air Force Aeronautical Systems Center (ASC) and the Air Force Research Laboratory (AFRL) joined the Navy in receiving one of the team awards for their joint leadership in aviation halon replacement. The award recognized the contribution the AFRL has made to aviation halon replacement fire suppression research and development. AFRL's scientific work made it possible for ASC and the Navy to develop and field the world's first aircraft with nonhalon fire suppression systems.

Toxics Release Inventory

Through targeted pollution prevention, weapon system recapitalization and technology investment, the Air Force has achieved a 69 percent reduction in Toxics Release Inventory releases since 1994. In Calendar Year 2006, Air Force facilities reported 1.5 million pounds of release and off-site transfers, a 34 percent decrease since the 2001 baseline, as shown in Figure 4-13.

Environmental Management Systems

Establishing an EMS framework is not only a requirement in the Air Force, but of all government facilities (see figure 2-1 for more information). In 2005, the Air Force issued a self-declaration policy outlining 28 steps for appropriate facilities to have an EMS in place and subsequent steps to reach EMS conformance. EO 13423 requires that each agency have a fully implemented EMS by December 31, 2008. DoD requested and received an extension to December 31, 2009. For a facility's EMS to be considered "fully implemented," the EMS

Category	CY2001	CY2002	CY2003	CY2004	CY2005	CY2006	CY2001–CY2006 % Change
On-site to Water	76,596	143,779	99,607	150,299	267,942	159,501	108.2%
On-site to Air	903,420	640,405	659,105	514,921	517,098	557,398	-38.3%
On-site Underground Injection	0	0	0	0	0	0	--
On-site Land	862,788	1,917,706	752,263	653,780	436,736	646,832	-25.0%
Off-site to POTW	211,722	220,171	181,712	108,087	85,407	35,090	-83.4%
Off-site Treatment	96,746	54,221	146,125	71,658	73,574	53,507	-44.7%
Off-site Disposal	124,355	277,749	123,548	116,835	51,045	60,013	-51.7%
Calculated Baseline	2,275,627	3,254,031	1,962,360	1,615,580	1,431,802	1,512,341	-33.5%

Figure 4-13. Air Force TRI Reportable Quantities, including Ranges

must meet the requirements of EO 13423, which include: a second-party external audit; senior management-recognized audit findings; and self-declaration. The Air Force anticipates having all EMSs certified by a second party by December 31, 2009.

In FY07, the Air Force had designated 172 appropriate facilities, with 100 percent having an EMS in place. Additionally, 76 facilities have declared in full conformance with the EMS policy, while 47 facilities have had their EMS audited by an external party. The Air Force anticipates having all EMSs certified by an external party by the end of fiscal year 2009.

Success Story

Currently, seven Air Force installations are members of the prestigious EPA National Environmental Performance Track.

Each installation qualified for the program through past achievements, continuous commitment to environmental compliance and implementation of a strong EMS.

As part of Performance Track, sites are eligible for numerous program benefits including EPA recognition and administrative and regulatory incentives which reduce paperwork. Members also have access to the Performance Track Network, a partnership with government and non-government agencies.
The following Air Force installations are EPA

Performance Track Members:

- Charleston AFB, South Carolina
- Ellsworth AFB, South Dakota
- Elmendorf AFB, Alaska
- Minot AFB, North Dakota
- Nellis AFB, Nevada
- Seymour Johnson AFB, North Carolina
- Sheppard AFB, Texas
- 173rd Fighter Wing, Kingsley Field, Air National Guard, Oregon

Ranges

The Strategic Vision for Ranges and Airspace, *Transforming the Air Force Range*, is the Air Force guidance for building and sustaining relevant ranges to meet the needs of the warfighter. The relevant range enables Airmen across multiple functional disciplines to hone their skills during full spectrum training or tactics development. Additionally, the relevant range must anticipate and support the future needs of a robust acquisition, test and evaluation process. The Strategic Vision emphasizes the development of comprehensive range planning, which include MAJCOM roadmaps and individual comprehensive range plans, based upon 10 key investment areas. The investment areas provide the foundation for supporting a relevant range and a mechanism to articulate range and airspace requirements. The Air Force operates 40 air-to-ground ranges, 36 of which are in the United States, and four overseas. Twenty of the ranges the Air Force operates are on land owned by another Service: 18 by the Army, 1 by the Navy and 1 by the Marine Corps. There are two ranges used for space launch activities: Cape Canaveral and Vandenberg AFB. The Air Force has operational assessment responsibilities at 27 of these Air Force-operated ranges, all of which were in compliance with DoD environmental assessment requirements at the end of FY07. ■

Chapter 5

Safety, Occupational and Environmental Health Performance

Overview and Commitments

An integral part of Air Force Operational Sustainability is the management of our human capital assets. Often, the "hard" infrastructure of environmental and economic resources is easier to recognize and evaluate. The safety and occupational health of Airmen, as well as the Air Force's relationships with communities and stakeholders, are key to sustaining current and future missions. As the fundamental resources who operate the Air Force's equipment, drive its weapons systems and manage its installations, Airmen are essential to the Air Force's mission of fighting and winning the Global War on Terrorism.

The Air Force emphasizes accountability at all levels of command to implement safety and occupational health programs and management controls, all of which support a partnership among leadership, unions and employees. This partnership focuses on active operational risk management and the identification, evaluation and control of preventable workplace hazards. This approach is fundamentally linked to the Air Force Wingman Program and the Air Force Smart Operations 21 initiative. In 2006, the Air Force chose to pursue recognition from the Occupational Safety and Health Administration (OSHA) through its Voluntary Protection Program (VPP) as a means to improve an already effective Safety and Occupational Health (SOH) program. Through VPP every Airman will obtain a fundamental safety situational awareness that includes inherent responsibility and accountability for recognizing and acting to abate unsafe and unhealthy conditions.

Air Force Safety

The Air Force Safety Program implements and executes the Air Force aviation, ground, weapons and space safety mission programs to preserve warfighting capabilities (see Figure 2-1 for more specific information). The program promotes safety awareness and mishap prevention, oversees mishap investigations, evaluates corrective actions and directs safety and operational risk management education. The Air Force Safety Center's Divisions are described below in terms of their scope and mission.

The Aviation Safety Division preserves combat readiness through prevention of aviation and aviation-related mishaps, injuries and fatalities. It also includes the Bird/Wildlife Aircraft Strike Hazard Team, which oversees reduction of wildlife hazards to aircraft operations.

The Ground Safety Division (SEG) develops Air Force Ground Safety Programs and Procedures as well as current Air Force Office of Safety and Health standards. It also performs mishap final evaluations and provides lessons learned and analyses to United States Air Force (USAF) units.

The Analysis and Integration Division, ensures proactive mishap prevention guidance for all safety disciplines including nuclear surety by providing interactive dialogue and program expertise. They promote Operational Risk Management through the use and integration of proven risk identification and assessment principles and techniques into policy, plans, and program development. Their overall safety knowledge and weapons systems experience place them in the forefront to represent USAF interests as members of numerous boards, panels, committees, and working groups involved in developing safety policies and programs. SEA is responsible for development of the Air Force Safety Strategic Plan. The division also manages and maintains the USAF Safety Database for all mishaps, responds to customer requirements for mishap data, and oversees the development and management of

the Safety Automated System, providing the Air Force with an internet-based mishap-reporting data entry and retrieval system. The SEA Division also manages the Air Force Safety Awards and Operational Risk Management Programs.

The Safety Education, Media and Force Development Division (SEM) serves as the foundation of excellence in ensuring the continuous professional development of all personnel assigned to Safety staffs and/or supporting Safety Air Force-wide. SEM provides education and training to achieve work-related competencies, performance and fulfillment to aid mishap prevention efforts. Requisite safety education and training is provided to enhance safety knowledge, skills, and abilities which enhances aerospace power. Education and training encompasses all Safety disciplines: aviation, ground, weapons, and space and missiles to ensure mission-ready capabilities are preserved for the USAF. SEM also provides interactive education and training through on-site classroom course offerings, web-based course offerings, distance learning courses, seminars, work groups, teams and senior leader forums. Additionally, enhanced knowledge is provided through the proactive marketing of Safety events, and issues and concerns through print and visual media such as award-winning magazines, newsletters, videos and commercials.

The Weapons Safety Division provides for safety certification of nuclear systems and equipment; maintenance of nuclear weapon system safety rules; certification for use of new or modified conventional munitions; development of Air Force, Joint and Office of the Secretary of Defense explosives safety policy and standards; safety approval of explosives facility siting and construction plans; hazard classification of munitions for storage and transportation; conventional munitions and nuclear mishap reporting, investigation and analysis; radiological safety associated with weapons and reactor operations and historical weapons maintenance and mishap locations; and weapons safety program oversight, staff assistance and education.

The Space Safety Division develops, manages and evaluates Air Force space mishap prevention programs to preserve national space assets through technical and investigative space mishap expertise, as well as the policy that supports risk management principles.

The Human Factors Division assists all safety disciplines to recognize and mitigate the human-related hazards and vulnerabilities predisposing operational failure by the use of mishap analysis, system safety surveillance, identifying organizational climate factors with safety implications, research, education and hazard control recommendations.

Key Air Force Safety and Occupational Health Goals		
Focus Area	**Requirement**	**Goals**
Mishap Rates	DoD Requirement	By FY08, achieve a 75% reduction in mishaps, mishap rates and associated lost work days (against FY02 baseline)
OSHA VPP	Air Force Internal Initiative	Conduct 10 VPP Assessments per year
		Achieve VPP status at all Air Force installations

Figure 5-1. Key Air Force Safety and Occupational Health Goals

Air Force Occupational and Environmental Health

Air Force Occupational and Environmental Health (OEH) is executed through the Aerospace Medical Program (AMP) and includes expertise in Flight Medicine, Public Health, Bioenvironmental Engineering, Aerospace Physiology, Health Promotion and others [see Air Force Instruction (AFI)148-101 for specific information]. The AMP is responsible for the multidisciplinary aspects of aerospace medicine that support the Air Force Medical Service Desired Effects: Ensure a Healthy and Fit Force; Prevent Casualties; Restore Health; and Optimize and Enhance Human Performance. The AMP includes all aspects of OEH from identifying the potential occupational or environmental health risk, to recommending mitigation strategies, accomplishing illness prevention education through identifying occupational exam requirements, and completing the occupational health medical exam. The OEH Working Group provides the guidance for the installation's occupational health program and includes all the OEH experts including leadership by Installation Occupational and Environmental Medicine Consultant.

The health promotion program provides effective, integrated and comprehensive health promotion programs to military personnel, Department of Defense (DoD) personnel and other beneficiaries. According to AFI 40-101, health promotion is the science and art of helping people change lifestyle behaviors to move toward a balance of physical, emotional, intellectual, social and spiritual health. The areas of emphasis include obesity; physical activity; tobacco use; substance abuse; responsible sexual behavior; mental health; injury and violence; environmental quality; immunization; and access to health care.

The focal point at each Air Force installation to improve the fitness level of its people is the Health and Wellness Center (HAWC). The

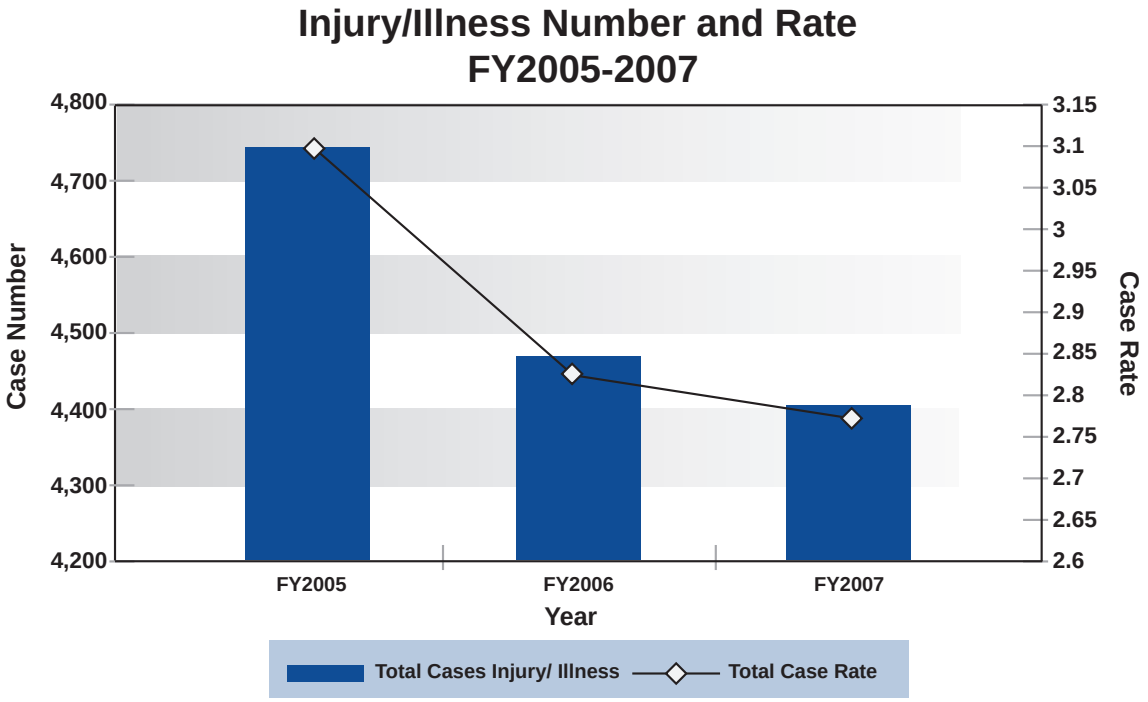


Figure 5-2. Civilian Injury/Illness Case Number and Rate, FY05–FY07

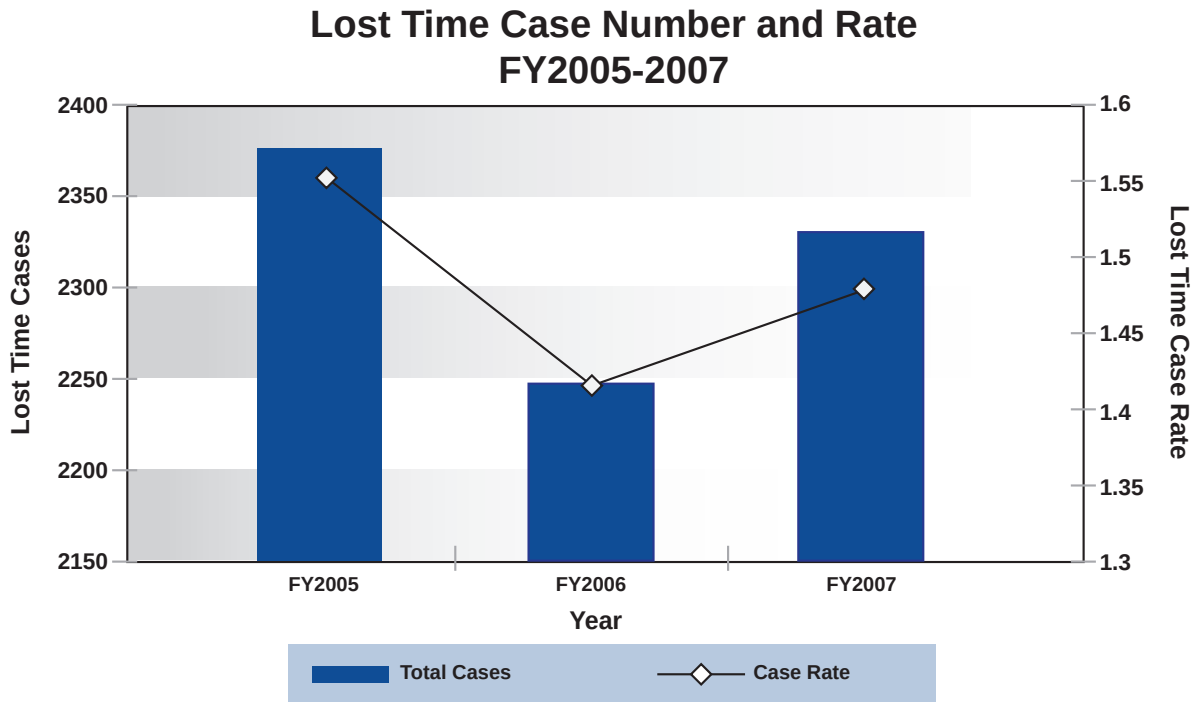


Figure 5-3. Civilian Lost Time Case Number and Rate, FY05–FY07

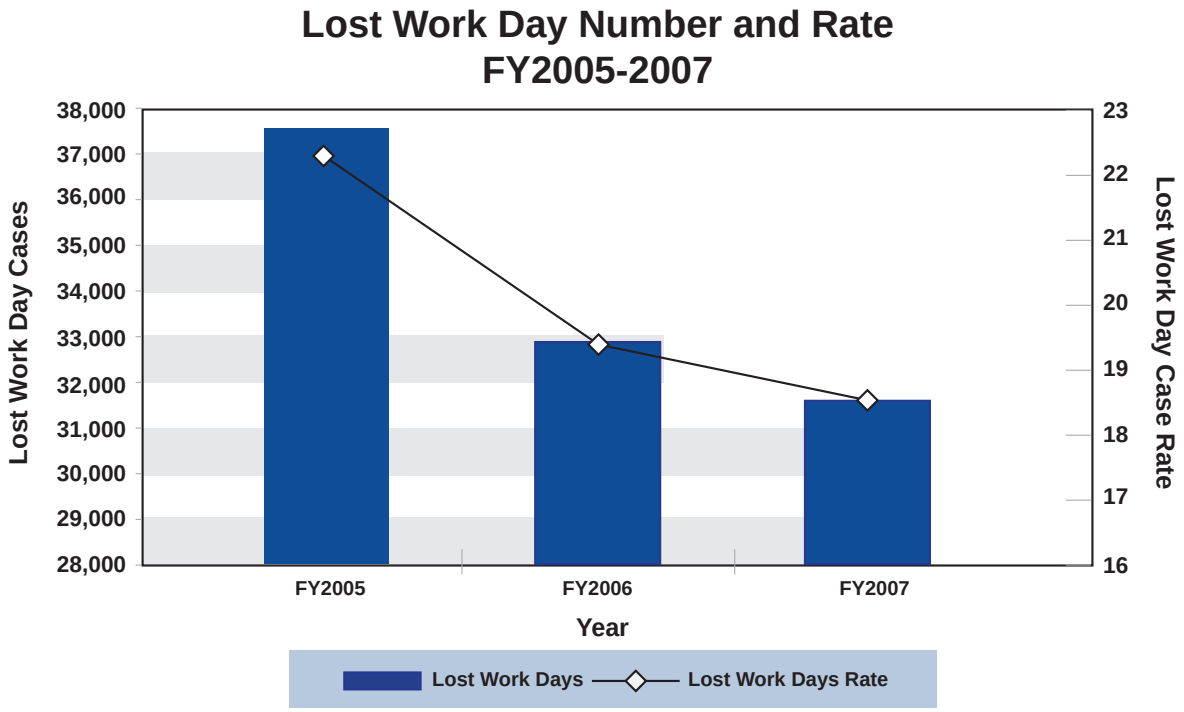


Figure 5-4. Civilian Lost Workday Number and Rate, FY05–FY07

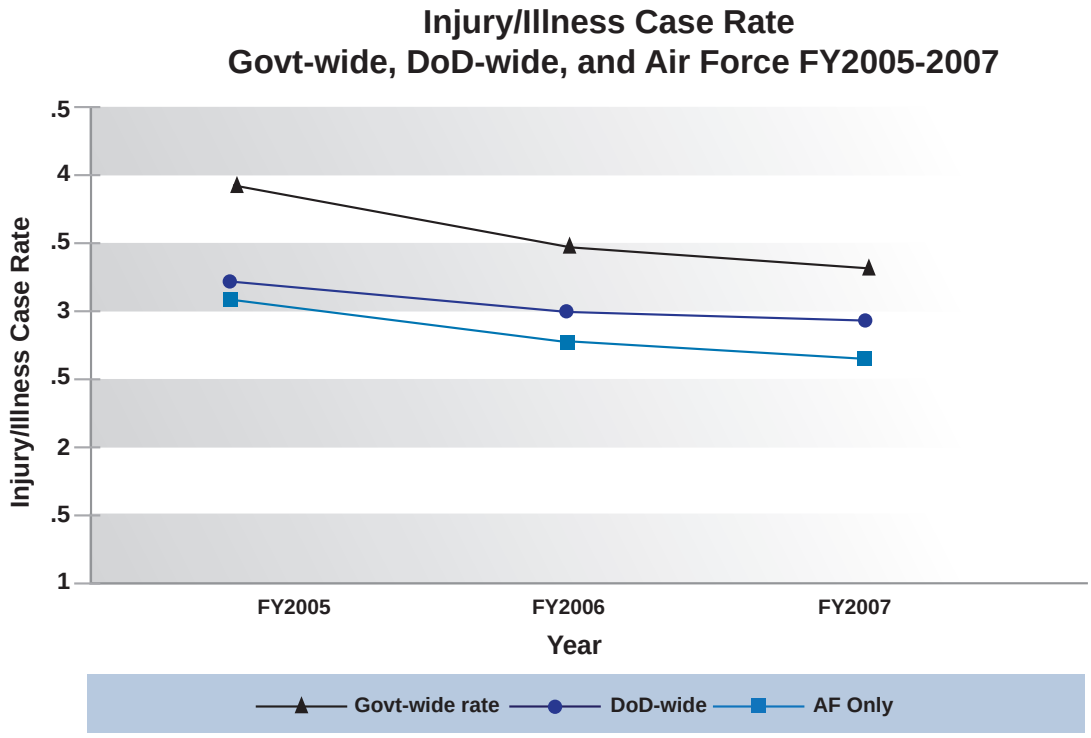


Figure 5-5. Civilian Injury/Illness Case Rate: Government-wide, DoD-wide and Air Force, FY05–FY07

focus is on providing a full-time, one-stop shop for health and fitness programs. Specific goals of HAWCs include ensuring Air Force physical fitness standards are clear and concise and annual evaluation requirements are completed. These facilities, in conjunction with fitness centers, are considered the key to improving overall Air Force fitness.

Safety Goals and Objectives

In Fiscal Year 2003 (FY03), the Secretary of Defense challenged the Service Secretaries to reduce mishaps, mishap rates and associated lost workdays 50 percent by FY05. DoD Strategic Planning Guidance further directs the Services to reduce mishaps, mishap rates and associated lost workdays 75 percent by FY08. Though the Air Force did not meet the 75 percent reduction goal in FY07, the Air Force continues to make progress in reducing mishaps and mishap rates. Instituting intervention strategies and changing organizational culture regarding workplace safety remains one of the Air Force's top priorities. A summary of key goals driving Air Force Safety and OEH Program priorities and execution is presented in Figure 5-1.

The Air Force will continue efforts to meet the Secretary's FY08 75 percent mishap reduction goal. Every effort is being made to identify hazards and deficiencies in the workplace, unsafe work practices and behaviors and educate our employees on the benefits of being safe. The Air Force will continue to pursue VPP Star status for their installations both in the Continental United States and overseas.

Safety Results

The Air Force continues to exhibit leadership and commitment to protection of its Airmen, as evidenced by the lowest civilian injury rate with-

Category	FY2005	FY2006	FY2007
Aviation Flight Class A Mishap	32	19	27
Aviation Flight Class A Rate	1.49	0.9	1.32
Aviation Flight Class B Mishap	87	71	86
Aviation Flight Class B Rate	4.06	3.36	4.19
Aviation Flight Class C Mishap	449	516	518
Aviation Flight Class C Rate	21.0	24.1	25.3
Total Aviation Flight (Class A – C)	568	606	631
Ground Class A Mishap	71	82	81
Ground Class A Rate - On Duty	1.81	3.22	1.89
Ground Class A Rate - Off Duty	14.85	15.5	17.5
Ground Class B Mishap	34	44	50
Ground Class B Rate - On Duty	3.8	5.73	6.02
Ground Class B Rate - Off Duty	3.16	2.9	3.75
Ground Class C Mishap	3422	3654	3751
Ground Class C Rate - On Duty	249	280	302
Ground Class C Rate - Off Duty	497	503	499
Total Ground (Class A – C)	3527	3771	3882
Fatalities			
Pilot	3	0	2
All Aviation Flight	12	0	2
Total Ground Fatalities Total On-Duty / Rate Total Off-Duty / Rate	 11 / 1.99 59 / 16.05	 11 / 1.97 56 / 13.54	 6 / 1.03 64 / 15.99

Source: Air Force Safety Center data at http://www.afsc.af.mil/ and http://www.afsc.af.mil/organizations/aviation/aircraftstatistics/index.asp. The ground mishap counts include on-duty military and civilian and off-duty military private motor vehicle and sports and recreation mishaps. On-duty ground mishap rates are calculated based on the number of mishaps in a particular year per 100,000 service members and civilian employees combined; off-duty ground mishap rates are based on the number of mishaps in a particular per 100,000 service members only. Aviation Class A through C rates are calculated based on the number of mishaps per total hours flown in a particular year and then rated per 100,000 hours. For example, in 2005, the US Air Force flew approximately 2.15 million hours, so that the total number of mishaps x 100,000 hours /total flight hours would be 32 x 100,000 hours / 2,150,000 hours, which equals 1.49. The U.S. Air Force flew approximately 2.15 million hours in FY05, 2.11 million in FY06 and 2.05 million in FY07.

Figure 5-6. Air Force Total Mishaps, Rates and Fatalities by Year

in DoD and injury/illness rate performance that is much lower than the government average. In 2007, the Air Force had reductions in total case rates and lost workday rates, with moderate increases in lost-time case rates as reported in its annual report to the Department of Labor for active civilian personnel (see Figures 5-2 through 5-4).

Injury/Illness and Mishap Rates

Building a culture of safety is not just a quality-of-life issue. An Airman or worker sidelined by preventable injuries and illnesses puts a highly trained resource out of commission. In 2007, the civilian injury rate was 2.78 per 100 people, meaning there were 4,417 injuries and illnesses and 2,327 of those that resulted in lost

time. There were more than 2,200 active duty injuries, which amounted to about 30,000 lost duty days.

In FY06, the Air Force had one of the safest flying years in history (based on total Class A mishaps and associated rates). In FY07, the Air Force experienced 27 Class A aviation flight mishaps and 14 destroyed aircraft, up from 19 Class A Aviation Flight mishaps and 8 destroyed aircraft the previous year. There were setbacks in a few weapon systems and significant safety progress in others, with the overall FY07 mishap rate coming in just below the 10-year average. Figure 5-6 provides a summary of the Aviation and Ground Safety mishaps, rates and facilities during the period of FY05 through FY07.

A Class A, B, or C mishap is defined as follows:

Class A Mishap: A mishap resulting in one or more of the following:

- Direct mishap cost totaling $1,000,000 or more
- A fatality or permanent total disability
- Destruction of a DoD aircraft

Class B Mishap: Occurs when at least one of the following applies:

- Direct mishap cost totaling $200,000 or more but less han $1,000,000
- In-patient hospitalization of three or more personnel (does not count or include individuals hospitalized for observation, diagnostic, or administrative purposes that were treated and released)

Class C Mishap: A mishap resulting in one or more of the following:

- Direct mishap cost totaling $20,000 or more but less than $200,000
- Any injury, occupational illness or disease that causes loss of one or more days away from work beyond the day or shift it occurred
- An occupational injury or illness resulting in permanent change of job

Assistant Secretary of OSHA and Assistant Secretary of AF for Installations, Environment & Logistics sign cooperative agreement for reducing injuries and illnesses in AF and for pursuing VPP

2006	2007	2008
Tinker (7 Sites)	Hurlburt	Malmstrom
Warner Robins (8 Sites)	Whiteman	MacDill
Hanscom	Eglin	Charleston
Hill (10 Sites)	Edwards	Dover
Wright Patterson	McGuire	Laughlin
Eielson	David Grant Medical Center (Travis AFB)	Dyess
Altus	Kirtland	Goodfellow
Holloman	Elmendorf	Scott
Travis	Buckley	Sheppard
	Fairchild	(7 Planned for 2009)

Figure 5-7. Summary of Air Force Progress and Plans in Enrolling its Installations in the VPP

See *AFI 91-204, Safety Investigations and Reports* for further information and assumptions regarding Air Force mishap definitions.

Air Force VPP Implementation

The Air Force has undertaken an aggressive effort to participate in the OSHA VPP as a tool for success. The Air Force signed a Memorandum of Agreement on August 29, 2007 to enter into a partnership with OSHA to implement VPP.

The roll-out and execution of this initiative is guided by a formally established Concept of Operations Plan and is supported through leadership and technical assistance in the form of training, outreach and exchange of best practices. There are currently more than 30 sites pursuing excellence through VPP with a goal of 10 sites per year entering the program. Of special note, the Air Force recently achieved Star status—a first. Figure 5-7 provides a summary of Air Force progress and plans in enrolling its installations in the VPP.

The Air Force recognized its first Voluntary Protection Program Star Site, the 148th Fighter Wing, Minnesota Air National Guard, Duluth, Minnesota in June 2008

Hearing Conservation/Occupational Health

Occupational health data provided by the Air Force Medical Operations Agency identified a total of 287 reportable hearing loss events in 2006 and 326 in 2007. Non-Hearing Conser-

vation Program occupational illnesses totaled 266 in 2006 and 275 in 2007, respectively. Note that 2006 data were obtained through a combination of the Air Force Reportable Events Surveillance System and the Air Force Safety Automated System (AFSAS). Data on occupational illnesses reported in 2007 were obtained from the AFSAS exclusively.

Success Stories

The Air Force recognized its first VPP Star Site, the 148th Fighter Wing, Minnesota Air National Guard, Duluth, Minnesota in June 2008. In response to this important accomplishment, the Assistant Secretary of the Air Force (Installations, Environment, and Logistics) and the Assistant Secretary of Labor (OSHA) attended the event to present the Star certification. VPP Star status is enjoyed by only 2,000 of the top SOH companies in the country and demonstrates superior safety performance.

Travis Air Force Base (AFB), California, is actively using VPP performance elements to improve safety and health while pursuing VPP Star recognition. They have instituted a telework program to allow injured employees to work from home using special equipment to accommodate their medical limitations.

Since 2004, Hill AFB, Utah, has generated 54 job offers and 28 job acceptances through the DoD Pipeline Reemployment Program resulting in a total cost savings/avoidance of approximately $32 million. The DoD Pipeline Program is the primary tool utilized in returning injured employees to work sooner in order to decrease the Office of Workers' Compensation costs.

At the USAF Academy, Colorado, Safety, Health and Return to Employment (SHARE) and Federal Employees' Compensation Act have been integrated into the SOH programs. Data-driven initiatives included replacing flooring in the Cadet Dining Facility kitchen to reduce slips and trips and installation of a new ice machine to eliminate "scooping," thus reducing repetitive hand pain and injuries. This accomplishment is especially significant when noting the Cadet Dining Facility serves more than 3 million meals and prepares more than 100,000 box meals for Cadet Wing programs and club activities each year.

At Grissom Air Force Reserve Base, Indiana, the SHARE program is briefed at all quarterly Environment, Safety and Occupational Health Council meetings. All commanders and supervisors are required to attend these meetings where mishap rates, mishap reporting procedures and problem areas are discussed. The SHARE program is briefed at all supervisory safety training classes and is part of all safety program evaluations. Commanders are held accountable for corrective actions. This command emphasis has had a very positive impact on the overall safety program. ■

Chapter 6

Relationships with Stakeholders

Relationships with Stakeholders

Chapter 6

A Major from the Thunderbirds, the AF Demonstration Squadron, Visits a Summer Camp

The Air Force fully understands the critical role of strong, transparent and routine relations with internal and external stakeholders in helping to sustain the mission. As an important economic contributor for many communities and as a partner in the nation's defense, the Air Force is expected to be a good steward of environmental resources, (whether air, land, or water in the real estate portfolio) and a wise manager of human resources (in terms of the safety and health of the Air Force's workforce).

These relationships with stakeholders are governed by a wide-array of Federal statutes, Department of Defense (DoD) policy guidelines and internal Air Force instructions. But, even more important, a commitment to enrich relations with stakeholders is driven by Air Force core values. In short, while defined policy and processes have been established, relations with stakeholders are part of the norm of Air Force operations.

Stakeholders are defined as those entities or individuals that can reasonably be expected to be significantly affected by Air Force activities. Therefore, for purposes of operational sustainability, stakeholders broadly include on-base and surrounding communities; customers (including the warfighter, the other military services, coalition allies and other Federal agencies); the United States Congress; internal Air Force civilian, military and contractor workforce; external suppliers from the industrial base; organized labor; and the American public at-large.

1132nd Military Police Company, NC Army National Guard load onto a NC Air National Guard C-130 in MS

This broad and inclusive view of stakeholders ensures that interests are communicated, stakeholder interests are understood and feedback is solicited from those entities affected by Air Force activities.

The outcomes of stakeholder engagement processes support and inform ongoing decision-making around energy, environment and occupational health and safety issues. One of the first steps in conducting any outreach effort for the Air Force is to identify, segment and clearly define specific stakeholders for any initiative. This process (often using interviews, surveys, focus groups, or document reviews) helps ensure that the Air Force knows explicitly which stakeholders to engage.

The subsequent paragraphs describe, in very brief terms, representative examples of the

approaches the Air Force uses to successfully engage with a multitude of stakeholders and how these interactions facilitate an exchange of information (from the Air Force to stakeholders and from stakeholders back to the Air Force). The specific nature of the approaches and their frequency, is dependent on the unique needs of each initiative.

In conducting relations with **on-base stakeholders** (such as military personnel, civilian staff and the contractor workforce), most communication is part of normal command leadership activities. These typically include two-way dialog in Town Hall meetings, Commander's Calls, staff meetings and the dissemination of command messages via base newspapers, e-mail correspondence, web sites and even command access cable television channels. Issues pertaining to occupational safety and health are especially important to the **civilian, military and contractor workforce** and are communicated through well defined workplace notices, posters, training programs and formal policy statements to employees. Engaging with **organized labor unions** is equally important. Often installations have stewards from public employee unions that participate with Air Force supervisors in labor/management committees and even formal arbitration activities. These interactions provide forums to engage unions in discussions around worker safety and health issues.

U.S. Air Force Major General Jack Egginton, left, Vice Commander, 3rd AF, U.S. AF in Europe, speaks with civic leaders at Aviano Air Base, Italy. Civic leader tours allow influential community figures to gain a greater understanding of the Air Force's mission and role in global operations

The vitally important engagement with **surrounding community stakeholders** is conducted through an equally wide range of communication channels and forums. Installation commanders rotate on a regular basis, approximately every two to three years, while at the community level both decision makers and opinion leaders remain in place over a longer term. The challenge for any commander is learning the complexity of the local situation, building relationships within the community and thus promoting continued military viability with the community. For example, Air Force installations often host joint panels of community members and government officials to address environmental restoration discussions (formally known as Restoration Advisory Boards [RABs]). RABs offered communities the opportunity to learn about the Air Force environmental restoration program and to provide input and feedback into decisions around restoration technologies and priorities. Air Force installation leaders (in coordination with base Public Affairs Officers) also engage with communities through speakers' bureau events, presentations to community groups and membership in organizations to foster open communication and ongoing interaction.

Likewise, the Air Force has defined processes and channels to engage with **other Federal agencies, State agencies and Regional entities**. For instance, the Air Force invests heavily in facilitated environmental partnering to bring together representatives from installations in routine discussions with officials from the Environmental Protection Agency (EPA), regional Air Force environmental leaders and state EPA-equivalents. These partnering meetings are intended to facilitate a dialogue between the Air Force and stakeholders to resolve conflict, share information and capture input to make decisions more collaborative. Two examples of engagement that involve Federal, State, local governments and non-governmental organizations are the Southeast Regional Partnership for Planning and Sustainability and the Western Regional Partnership. Under the leadership of the Office of the Secretary of Defense and with active participation by all Services, these partnerships bring together key players on a regional basis to address critical readiness and environmental issues of mutual concern.

Air Force engagement with stakeholders in **Congress**, however, follow much more formal and defined processes. Each year, the Air Force issues multiple reports to Congress that are formally staffed through leadership chains. Additionally, discussions with staffers and leadership testimony to committees are vetted through the Air Force Legislative Liaison staff to ensure consistency of message and the accuracy of data and information exchanged with Congress. While reports and testimony provide vehicles for the Air Force to present information to Congress, it is the authorization legislation, oversight functions and appropriations language enacted through Congress that gives the Air Force feedback to integrate into Energy, Environment, Safety and Occupational Heath efforts.

The stakeholder engagement with other Air Force **customers** (such as the war fighters, Sister Services and allies/foreign militaries) takes many different paths. Overall Air Force involvement with the other Services includes such large scale events as the preparation and support of the Quadrennial Defense Review process to comprehensively examine defense strategy, force structure, force modernization plans, budgets and infrastructure. Infrastructure considerations may specifically address operation and sustainment of environmental and property resources. Other examples of Air Force engagement with sister Services include

the attendance and participation in the Joint Services Environmental Management (JSEM) Training conference. JSEM highlights the new and innovative ways the DoD, other Federal agencies, states, the defense industry and related partners are transforming to meet environmental and energy challenges and to adjust installation scope and scale to meet operational requirements. Finally, the Joint Services Safety Conferences provide forums for the Air Force to interact, communicate and exchange knowledge with other Services about occupational safety programs, compliance with regulatory requirements and educational techniques.

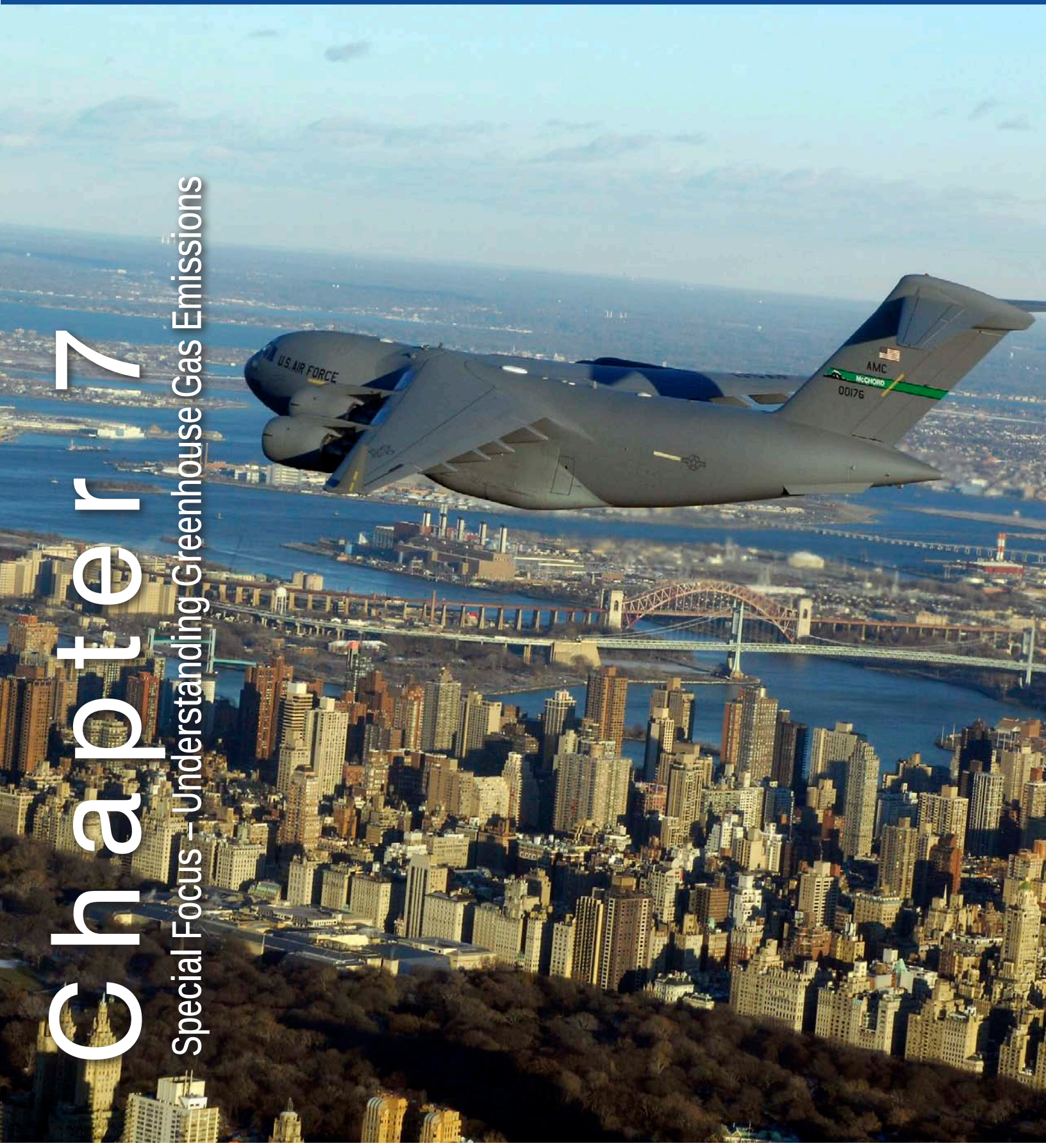
To maintain meaningful relationships with **suppliers and industry partners**, the Air Force applies tools such as industry forums or pre-solicitation conferences to support formal acquisition processes. Furthermore, to ensure that employees and leaders understand the perspectives of suppliers in industry, the Air Force operates programs to place leaders in "training-with-industry" programs so that they may work side-by-side with industry partners to develop and mature relations with the industrial base.

In communicating with the **American public** at-large, the Air Force conducts relations through the media through the Secretary of the Air Force's Directorate of Public Affairs (SAF/PA). SAF/PA use traditional news releases, Web sites, editorial board meetings, press conferences and other mechanisms to reach the public. Furthermore, the Air Force makes great use of its open houses, air shows and community events to engage with the public. As an example of specific environmental interactions, the Air Force makes use of the public Sustainable Ranges Web Site on the Defense Environmental Network Information eXchange—an information portal for EESOH news—as an early initiative to inform communities about sustainable ranges initiatives. Additionally, the Air Force—in collaboration with the DoD—has reached out to a number of non-governmental organizations by participating in conferences and conventions, speaking at events and hosting an educational exhibit at events across the country. The Air Force's willingness to discuss policies, programs and long-term goals with these organizations has allowed active and beneficial partnerships to form, adding to the success of our missions.

In summary, a crucial element of sustaining Air Force operations is the partnership and collaboration with stakeholders. Conserving these "social" resources (in terms of trust) helps the Air Force calibrate, support and sustain the mission of national defense. ■

Chapter 7

Special Focus – Understanding Greenhouse Gas Emissions



Chapter 7

Overview

The potential impacts of global climate change pose significant risks to the physical environment, the global economy and the overall Air Force mission. To prepare for and manage these risks, governments and businesses across the world are taking action to better understand how their activities contribute to the release of the greenhouse gases (GHGs) linked to global climate change and identify mitigation opportunities. Because of the close linkages between energy security, GHG emissions, environmental stewardship and Air Force mission sustainability, the Air Force is assuming a Federal government leadership role in the area of understanding and managing its GHG emissions. The Air Force is committed to reducing GHG emissions through implementation of energy conservation measures for development and integration of alternative and advanced energy technologies across a wide range of infrastructure, acquisition and operational areas—measures that sustain and advance the Air Force national security mission.

This chapter describes the results-to-date of recent efforts voluntarily undertaken by the Air Force to better understand the nature of its GHG emissions and the extent of the biological carbon sequestration that occurs naturally on Air Force installations. Please note that it contains excerpted information from a GHG emissions assessment that will be released as a stand-alone document later in 2008. Also, the voluntary Air Force GHG initiative described in this chapter expands upon limited GHG emissions reporting currently required of all Federal agencies under the Energy Policy Act, (EPAct) and Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy and Transportation Management*. While data used to estimate GHG emissions from building and facility energy consumption and motor vehicle fleet operations under EPAct and EO 13423 are also used in the voluntary Air Force GHG initiative described in this chapter, emissions associated with energy consumption from exempted spaces and facilities and from other sources not otherwise required to be reported under EPAct and EO 13423, are included. The resulting voluntary GHG inventory is thus more robust and more accurately portrays the extent of GHG emissions from Air Force operations. Additionally, the Air Force is examining land management practices that represent opportunities to use natural processes that absorb carbon from the atmosphere into vegetation and soil (biological sequestration) as a means of mitigating future climate change.

Air Force Greenhouse Gas Emissions Inventory Initiative

While GHG emissions are currently not regulated at the national level, recent policy actions by all branches of the Federal government indicate they may soon be centrally regulated within the United States. In the absence of overarching Federal regulations, many states, regional authorities and local governments are formulating their own GHG emission reduction policies and carbon management plans. As the largest single consumer of energy in the Federal government, the Air Force (which is recognized as the major contributor to direct and indirect GHG emissions) has a particular interest in how emerging GHG management requirements may impact operations and the Air Force commitment to environmental stewardship and sustainability.

Because future GHG management paradigms will depend on robust emissions inventories, in February 2008 the Air Force initiated the development of a comprehensive inventory of GHG emissions from Air Force owned and operated equipment. The inventory is structured to

capture the direct, indirect and fugitive emissions of the six commonly recognized GHGs (carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs] and sulfur hexafluoride [SF_6]) from domestic and international Air Force operations and to also account for emissions of the mission essential Class I ozone depleting substances (ODS) used to maintain legacy Air Force systems. To provide for the best transparency and scientific accuracy practicable, the inventory is being developed to maximize consistency with existing Federal agency energy reporting requirements and with voluntary GHG reporting guidance and protocols developed by organizations such as the World Resources Institute, the Environmental Protection Agency (EPA) Climate Leaders Program, the California Climate Action Registry and The Climate Registry (TCR). While no single protocol provided the ability to look comprehensively at all potential GHG sources of interest to the Air Force, the majority of the GHG inventory methodology is derived from the TCR General Reporting Protocol (March 2008). Solid waste emissions are calculated using EPA emissions estimating tools, consistent with EPA Climate Leaders Program methodologies.

Consideration of GHG emissions will be incorporated as another aspect of the Air Force Energy, Environment, Safety and Occupational Health Management System, primarily as a consequence of energy management and inventory development will be formalized as a recurring requirement for all Air Force installations. Lessons learned from the process of identifying, collecting and analyzing underlying data used in the inaugural inventory will be shared Air Force–wide. This will allow installations to respond more efficiently to requests for information from internal and external stakeholders, and will assist them in complying with possible future regulatory reporting requirements.

Air Force Biological Sequestration of Carbon Assessment

The voluntary Air Force GHG inventory initiative is complemented by a quantitative assessment of how Air Force–managed natural resources in the United States contribute to the removal and sequestration of atmospheric carbon. The assessment uses U.S. Forest Service (USFS) forest carbon estimating models, soil data derived from Department of Agriculture, Natural Resource Conservation Service (NRCS) soil maps, Air Force geospatial and natural resource data, and peer-reviewed soil organic carbon factors to generate a first order approximation of the amount of carbon sequestered on Air Force lands. Orders of approximation are commonly used in science, engineering and other quantitative disciplines to make approximations with varying degrees of precision based on data availability and the use of generalizations and assumptions. An understanding of how carbon is being sequestered on Air Force lands will assist Air Force decision makers in considering the carbon impacts and opportunities attributable to alternative land and natural resource management strategies.

Assessment Information Objectives and Strategies

Under the inaugural GHG inventory, general information objectives were established for the baseline inventory development process and for compliance with existing Federal energy conservation and associated GHG performance requirements. The results of the comprehensive GHG inventory and carbon sequestration assessment are desired by the Air Force to establish a corporate emissions baseline against which future goals and targets for man-

An Airman operates a non-motorized cycle to transport parts across the flight line at Dover AFB in DE

aging GHG emissions or carbon sequestration opportunities attributable to Air Force operations can be established.

GHG Emissions Inventory Development

Because of the nature of Air Force operations it was recognized that aviation energy and combustion activities generate the majority of Air Force GHG emissions, and that collecting information needed to accurately characterize fugitive and non-combustion emissions posed a greater challenge. Accordingly, an initial qualitative information objective of identifying authoritative Air Force and Department of Defense sources of energy, fuel, refrigerant and other chemical data was established.

While some voluntary GHG reporting programs provide participants the option of reporting only their CO_2 emissions during initial reporting cycles, the Air Force established a goal of reporting emissions of all six GHGs in its inaugural inventory and to optionally report emissions of Class I ODS. The Air Force inventory currently accounts for energy- and combustion-related emissions of CO_2, N_2O and CH_4 (from facility and infrastructure operation and the operation of Air Force aviation assets, motor vehicles and other equipment), as well as fugitive SF_6 and Class I ODS emissions. In obtaining the underlying activity data required to calculate Air Force GHG emissions, the Air Force maximized the use of existing data sources to minimize the need to issue additional data requests to Air Force installations. Leveraging top-down activity data such as the facility energy use, and government owned and leased vehicle fuel consumption information that is required to be reported under EPAct and EO 13423, Air Force GHG emissions were calculated. As of publication of this document, the collection and assessment of Air Force refrigerant HFC and PFC emissions, as well as emissions from waste water treatment, is on-going. Comprehensive emissions inventory information for all six GHGs and Class I ODS across all source categories will be available in a comprehensive, stand-alone report scheduled for release later in 2008.

Relationship with Existing GHG Requirements

Development of a comprehensive Air Force GHG inventory complements existing GHG requirements for all Federal agencies under EO 13423 which requires agencies to implement measures to reduce energy intensity and GHG emissions through reduction of energy intensity by at least 3 percent annually or by 30 percent by 2015, relative to the agency's energy use in Fiscal Year 2003 (FY03).

Biological Carbon Sequestration Information Development

Because of the generalities associated with available soil type and vegetative cover data, the Air Force established a carbon sequestration information objective of establishing a first order approximation of the carbon stored in forest and soil components of Air Force natural resources.

The amount of carbon biologically sequestered in Air Force managed forest lands is estimated by integrating available Air Force natural resource and conservation data and entering it into a USFS model. In calculating the amount of organic carbon sequestered in soil components, data from Air Force, NRCS, open source natural resource and geospatial information and installation boundaries are overlaid on top of NRCS State Soil Geographic Database maps to identify common soil types. Next, impervious surface (i.e., buildings, roads, parking lots, etc., that prevent precipitation from entering the soil) data layers are overlaid on top of the information and forested lands already reported are subtracted out, leaving an approximation of the soil component by primary soil types (soil orders) of Air Force installations. Finally, soil order-specific organic carbon factors are applied to develop an estimate of the carbon sequestered by soils. Results of the forest and soil analyses are then summed together to obtain a first order approximation of the rate of carbon storage in Air Force natural resources.

At any one point in time, Air Force managed forests are estimated to hold approximately 37 MMT of carbon. This be can thought of as the amount of carbon that would be released into the atmosphere if all forest acres were harvested and destroyed in one year.

Source: Air Force analysis using USFS COLE Model

Assessment Results

Air Force Greenhouse Gas Emissions Assessment Results

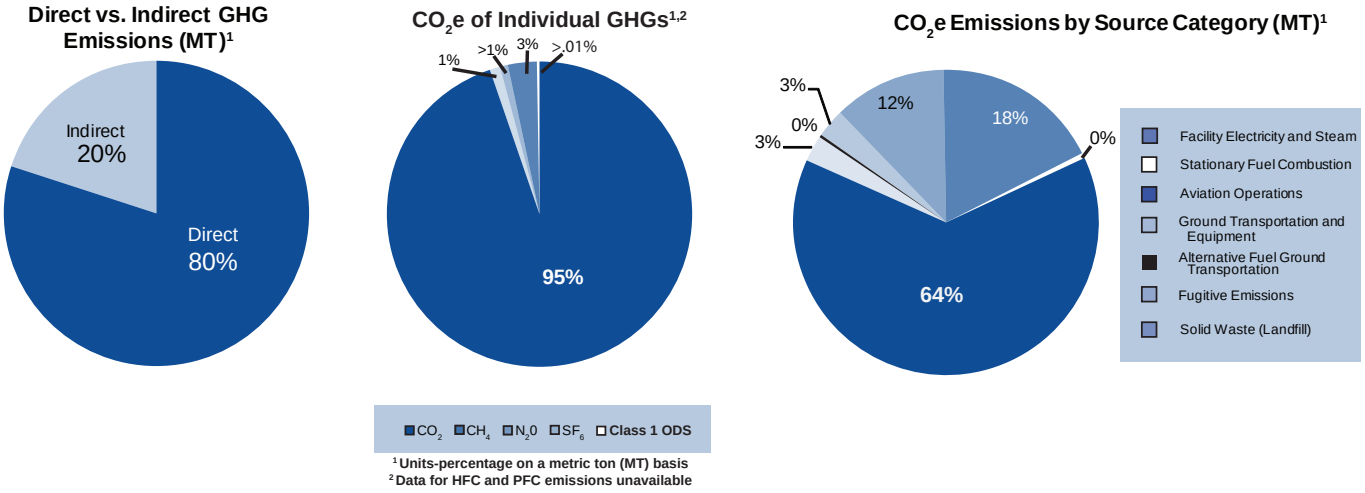
The term CO_2 equivalent (CO_2e) is the universal unit for comparing emissions of different GHGs in terms of the global warming potential (GWP) of one unit of CO_2. CO_2e values are calculated by applying chemical-specific GWP factors from the United Nation's Intergovernmental Panel on Climate Change to the mass of each chemical emitted. Available data indicate Air Force FY07 emissions of CO_2, N_2O, CH_4, SF_6, and ODS emissions total approximately 36.3 million metric tons (MT) CO_2e. In addition to reporting Air Force GHG emissions in terms of CO_2e, our inventory also reports emissions of the individual GHGs on a mass per GHG basis. Figure 7-1 summarizes and presents direct, indirect, and optional Air Force FY07 CO_2e and individual GHG emissions (in MT) by major source categories. For purposes of this report the Air Force optional reporting of Class I ODS as a GHG is presented as an aggregate, but the CO_2e values are calculated based upon ODS-specific GWPs. Emissions of individual ODS GHGs will be broken out and included in the stand-alone inventory report upon its release later in 2008.

A review of the data very clearly indicate that whether viewed collectively as CO_2e or individually by GHG, aviation operations are responsible for the vast majority of FY07 Air Force GHG emissions, with the next largest source being facility energy.

FY07 Air Force Direct, Indirect and Optional CO_2e and Individual GHG Emissions by Major Source Category (MT)*

		CO_2	CH_4	N_20	SF_6	Class I ODS	CO_2e
2007	**Indirect Emissions (Metric Tons)**						
	Facility Electricity and Steam	6,927,791	154	100.10	N/A	0.00	6,925,052
	Solid Waste (Landfill)	0	16,905	0.00	N/A	0.00	354,999
	Total Indirect Emissions	6,927,791	17,059	100.10	N/A	0.00	7,280,051
	Direct Emissions (Metric Tons)						
	Stationary Fuel Combustion	2,374,948	82	10	0.00	0.00	2,470,179
	Aviation Operations	23,979,516	677	988	0.00	0.00	24,234,521
	Ground Transportation and Equipment	1,080,409	41	33	0.00	0.00	1,091,379
	Alternative Fuel Ground Transportation	37,738	1	0.40	0.00	0.00	37,882
	Fugitive Emissions	0	0.00	0.00	47	4	1,139,300
	Solid Waste (Landfill)	0	1,878	0.00	0.00	0.00	39,444
	Total Direct Emissions	27,472,611	2,679	1,030.21	47	4	29,012,705
	TOTAL EMISSIONS	34,400,401	19,738	1,130.31	47	4	36,292,755

* Note: Data for HFC and PFC emissions unavailable at the time of publication



[1] Units-percentage on a metric ton (MT) basis
[2] Data for HFC and PFC emissions unavailable

[1]*For purposes of this report, Air Force GHG emission source categories are defined as:*

Facility Electricity *–Electricity purchased by the Air Force to power facility buildings and infrastructure*

Stationary Fuel Combustion *– Air Force combustion of solid, liquid or gaseous fuels in stationary heat- and/or power-generating equipment*

Aviation Operations *–The domestic and international operation of Air Force aircraft. Emission estimates provided in this report include emissions associated with Air Force international military aviation activities despite existing United Nations reporting guidelines that exempt emissions from international transport activities, or bunker fuels, from national reporting.*

Ground Transportation and Equipment *–The operation of on- and non-road engines, including Air Force fleet vehicles and construction equipment; aerospace ground support equipment; and emergency generators*

Alternative Fuel Ground Transportation *–The use of substitutes to traditional petroleum fuels and fuel blends (such as ethanol, biodiesel and compressed natural gas) in Air Force fleet vehicles and construction equipment*

SF_6 Fugitive Emissions *– Non-combustion emissions of SF_6 from mission system radar high voltage and waveguide components due to equipment leaks and evaporative processes*

Class I ODS Fugitive Emissions *– Non-combustion emissions of Class I ozone depleting substances from mission-critical equipment and applications due to equipment leaks and evaporative processes.*

Figure 7-1. FY07 Air Force Direct, Indirect and Optional CO_2e Emissions by Source Category (MT)

Air Force Biological Sequestration Assessment Results

The first order approximation of the amount of carbon sequestered in Air Force managed forests was generated using the USFS Carbon On-Line Estimator (the COLE model), http://ncasi.uml.edu/COLE/index.html. Although data from only 26 installations was used for the forest sequestration analysis presented in this section, the Air Force Natural Resources Subject Matter Expert estimates those installations contain approximately 85 percent of the forested land area in the Air Force installations inventory. Based upon the preliminary analysis with the COLE model, approximately 585,000 acres of forested land on 26 Air Force installations are estimated to be responsible for the sequestration of nearly 37,243,000 MT carbon. It is important to remember that the forest land carbon sequestration estimate represents a snapshot in time and does not represent carbon sequestered on an annual basis. Rather, the results should be thought of as the amount of carbon that would be released into the atmosphere if all forest acres were harvested and destroyed in one year.

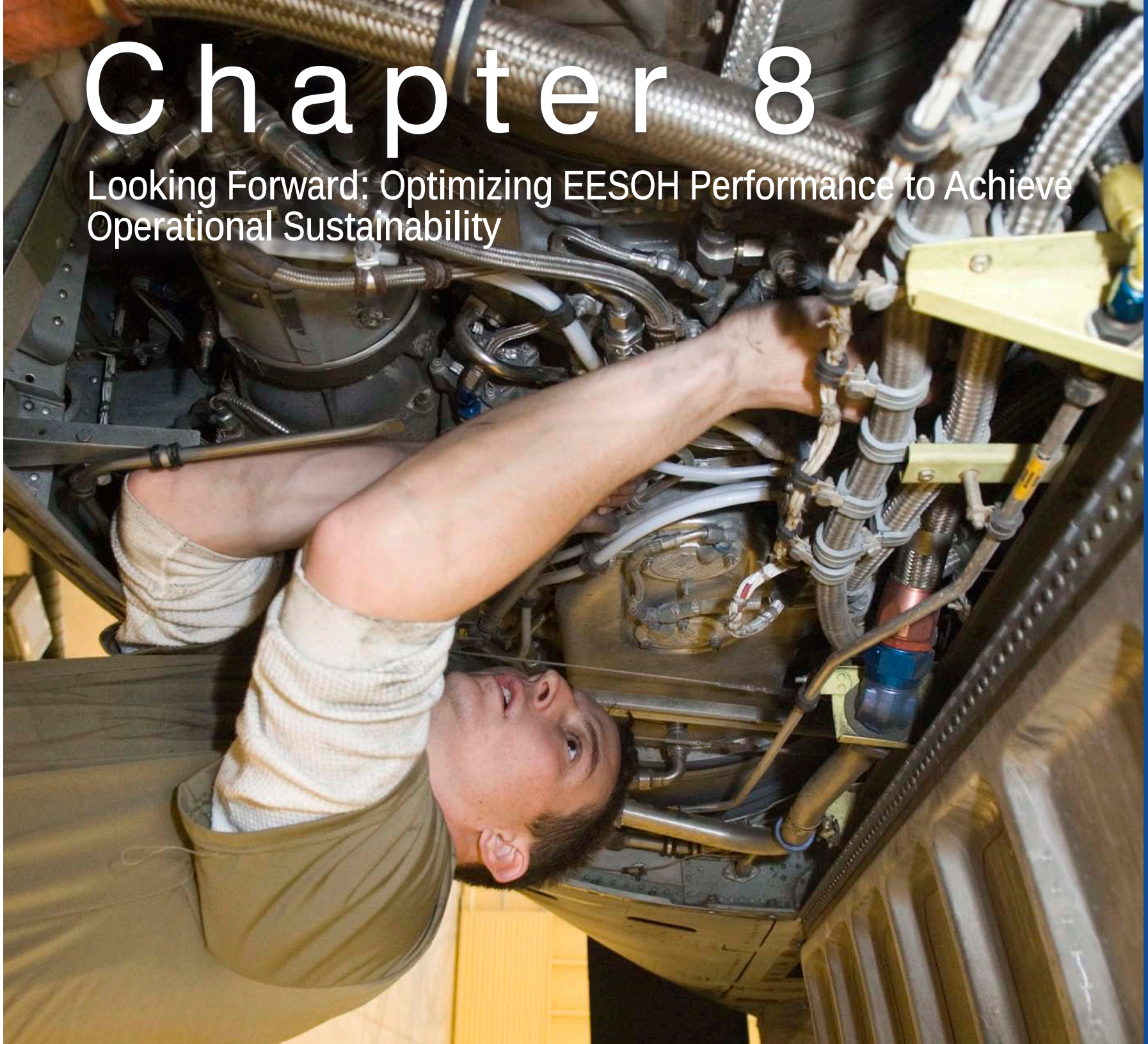
At the time of publication of this document the Air Force has not finalized its assessment of the amount of carbon sequestered in the soil component of Air Force managed lands. The assessment will apply soil organic carbon content factors (mid-range values) that have been independently developed for each of the 12 primary soil orders (http://soil.scijournals.org/cgi/reprint/70/2/590) to estimate the amount of carbon sequestered in each soil order. For the complete GHG report being prepared for release later in 2008, we intend to have calculations of the amount of carbon sequestered in both forest and soil components based on data from as many Air Force installations as possible. With the addition of data from other installations, the calculated amount of carbon naturally sequestered on Air Force lands will only increase. ■

Hickam AFB, HI – Hydrogen Fuel Production and Dispensing Station

Fuel powered vehicles are being replaced by electric vehicles at various Maintenance Squadrons for routine daily duties

Chapter 8

Looking Forward: Optimizing EESOH Performance to Achieve Operational Sustainability



Optimizing Energy Performance for Operational Sustainability

Energy requirements continue to increase in all major sectors of the economy and globally as economic development occurs. Energy requirements forecast globally for the next several decades exceed the amount of existing energy reserves, new energy development forecasts and anticipated capacity available through new renewable sources. The logistical implications of delivering or acquiring energy for mission operations are becoming increasingly important.

Air Force Energy Performance shows a continuing trend of reducing facility-related energy intensity coupled with an ongoing significant demand for fuels to support aviation and other operational equipment. It should be noted that in spite of overall reductions in energy use, driven primarily by energy conservation or installation and construction of more energy-efficient equipment and facilities, the rising cost of all purchased energy means overall increased energy costs have been experienced.

Air Force Energy Performance trends viewed from an operational sustainability perspective suggest the following:

The Air Force should continue to seek to ultimately have a process-specific understanding of all energy consuming activities, to include energy used by: energy-consuming equipment, energy-consuming facilities and energy-consuming logistics and transportation. With a process-specific view of all energy requirements, individual processes can be evaluated, prioritized for mission criticality and/or other factors and improved in a priority fashion to deliver mission requirements with the least necessary amount of energy for the whole activity.

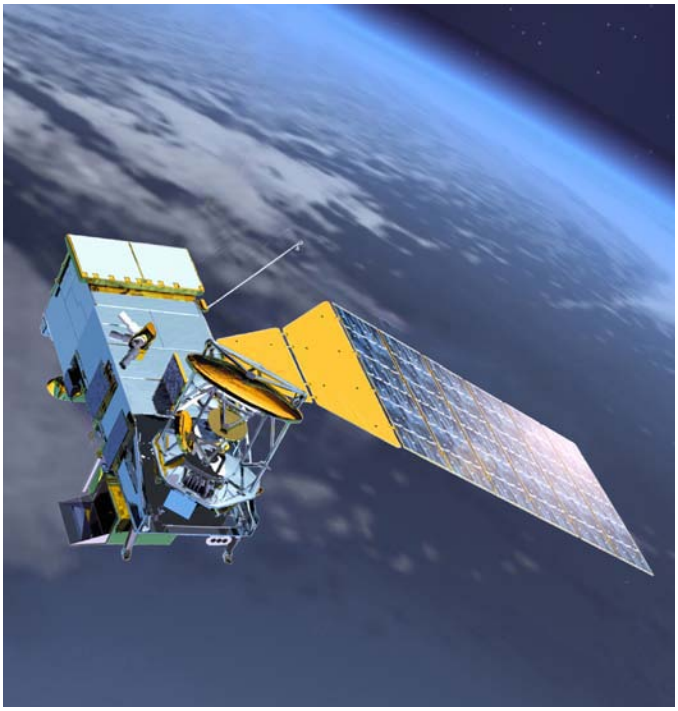
Mr. Ken Davis received EPA's prestigious Climate Change Award in May 2008 for his efforts in bringing wind turbine technology to FE Warren AFB, WY

The Air Force should continue to seek to leverage existing resources or authorities to produce or develop additional or alternative domestic sources of energy to meet mission and national requirements. A priority should be placed on considering those sources of energy that are renewable and sustainable for the long-term and can be developed in a manner that promotes sustainability of any other impacted resources. The Air Force is working to accomplish this through our synthetic fuel test and certification program; tests are underway to certify the C-17, B-1, F-15 and F-22 in 2008, with an objective to certify the entire fleet

by early 2011. With industry, we are exploring commercial-scale technologies for solar power, privately financed and operated coal-to-liquid aviation fuel plants and the potential for a small modular nuclear plant to be located at one of our installations.

The Air Force should continue to seek to reduce the externally-met energy requirements of mission critical systems/components, especially those systems/components that must operate in resource-limited environments, or where significant logistical undertakings are needed to provide energy to those systems/components. A priority should be placed on considering on-board, renewable energy to meet energy requirements for mission/critical systems/components.

Collectively, these efforts will assist in managing both the energy supply and demand-side considerations necessary to assure adequate energy to support the Air Force's ongoing mission activities.



A weather satellite being monitored at Schriever Air Force Base, CO

Optimizing Environmental Performance for Operational Sustainability

Environmental resource impacts continue to increase, globally as economic development occurs and environmental resources are drawn on to support the production and development of energy to meet heightened demands. Environmental resource impact forecasts for the next several decades project increased encroachment of available land through population growth, shortages in available water supplies, ongoing stresses to biodiversity and air quality impacts from escalating urbanization and industrial development throughout the world.

Air Force Environmental Performance shows a continuing positive trend over the last three years by reducing the amount of hazardous waste disposed and the amount of Toxics Release Inventory (TRI) reportable quantities [based on Calendar Year 2004 (CY04) to CY06]. In addition, the Air Force reduced the overall number of new enforcement actions, closing out open enforcement actions and reducing the overall amount of fines and penalties assessed during Fiscal Year 2005 (FY05) to FY07. There was a slightly negative performance trend associated with an increase in the amount of solid waste disposed and onsite water releases of TRI chemicals while Clean Water Act permit compliance rates and the availability of Air Force drinking water supplies have sustained high performance over the past three years. Overall, environmental performance achievements have met or exceeded most performance goals established by the Office of the Secretary of Defense for all military services.

F-22 Raptors on the flightline during Red Flag at Nellis Air Force Base, NV. Red Flag sharpens aircrews' warfighting skills in realistic combat situations

Air Force Environmental Performance trends viewed from an operational sustainability perspective suggest the following:

The Air Force should continue pollution prevention and efficiency improvement programs to minimize the amount of non-hazardous solid waste and hazardous waste generated that is not otherwise diverted (through reduction, composting, or recycling) coupled with ongoing attention to the procurement, use and disposal of TRI chemicals. These efforts would not only manage the Air Force environmental footprint but would free Airmen and budgetary resources otherwise required to address specialized management, reporting and disposal requirements.

The Environmental Management System framework is providing the Air Force with a formalized management system to promote continual improvement and integration of environmental consideration into daily operations. These systems should be leveraged as an effective means of establishing objectives and targets, maintaining adequate operational controls and seeking opportunities to instill improvements for operational excellence. With these efforts, the Air Force would continue to see relative work efficiencies, improved productivity and enhanced mission capability.

The Air Force should continue to embrace and implement a holistic approach to asset management that considers the most effective and efficient use of natural infrastructure (NI) encompassing both risks and opportunities to ensure availability for existing and future missions. To ensure adequate consideration of economic factors and long-term viability, lifecycle analysis and business case analysis should be considered to drive informed investment decision making. A major step in this

regard was made in January 2008, when the Air Force NI Assessment Policy was co-signed in January 2008 by the Office of Air, Space & Information Operations, Plans & Requirements; and the Office of Logistics, Installations & Mission Support. The policy letter requires each installation to conduct an NI Assessment beginning in 2008 with an annual review and update thereafter. Further guidance on NI management is forthcoming in Air Force Instruction 32-7001 (Environmental Management) and Air Force Pamphlet 32-7001.

As the Air Force experiences organizational change through Air Force Smart Operations 21 and modernization initiatives, the efforts identified above could play an important role in integrating environmental and sustainability considerations into the operational processes and systems associated with our operations and the daily activities of every Airman.

Optimizing Safety and Occupational and Environmental Health Performance for Operational Sustainability

The Air Force is being challenged to address an increasingly complex mission while accomplishing its operational activities with finite human capital and budgetary resources. Thus, the Airman is faced with diverse training requirements, increased productivity pressures and a general increase in requirements. As a result, the Air Force is ever more dependent on a productive, healthy workforce to support its operational capabilities.

Air Force Safety Performance showed an overall reduction in the number and rate of injuries, lost time and lost work days of active civilians during the period of FY05 to FY07

KC-10A Extenders and C-17 Globemasters taxi during the "elephant walk", an exercise demonstrating response to emergencies, at McGuire AFB, NJ

with an overall injury/illness case rate below the government average. The total number of mishaps and rates for both aviation and ground safety increased moderately from FY05 to FY07. The Air Force had an overall reduction of Aviation Flight related fatalities (12 in FY05, 0 in FY06 and 2 in FY07) and little change in overall ground operations-related fatalities, which include off-duty military fatalities (70 in FY05, 67 in FY06 and 70 in FY08). Although the number of Safety, Occupational and Environmental Health inspections (Safety and OEH) by type has remained fairly constant over the years, the total number of findings for each inspection type has increased from 2004 to 2006 except for Health Services Inspection and Program Management Evaluations. Internal inspections and monitoring programs showed the greater number of findings were related to confined spaces, hazard communication, hearing conservation, lock-out/tag-out, training and management. The Air Force also tracks occupational exam currency rates.

In addition, the Air Force is initiating global metrics for health promotion in FY08 to help identify gaps, assess needs Air Force-wide and improve current programs and services. Metrics include fitness, nutrition/obesity and tobacco use, specifically percentage of non-exempt population with passing fitness score of 75 or greater, percentage of Airmen with a Body Mass Index score less than 25 and percentage of members not using tobacco products.

Building on its strong Safety and OEH programs with leadership emphasis on the aviation and weapons arenas and preventive medicine, the Air Force is pursuing continual improvement efforts to promote safety and health excellence and support operational sustainability. There are currently more than 30 sites pursuing excellence through the Voluntary Protection Program (VPP) and the Air Force's long-term aspiration is to implement VPP at all installations, fence-to-fence and achieve Star status, where feasible. Private sector experiences with the VPP have generated substantial benefits, including reduced mishap rates, effective risk management and improved productivity—all key elements in promoting operational excellence to enhance mission capability.

Optimizing the Energy, Environment, Safety and Occupational Health Management Framework

The future of Energy, Environment, Safety and Occupational Health (EESOH) management in the Air Force must maintain pace with the reality of limited resource availability and heightened demands for alignment of all functions—including EESOH—to support operational capabilities. The situation requires alignment and integration of EESOH policies, programs and processes with mission requirements. This can be accomplished through a management system that enables planning, executing, evaluation and acting to improve mission capability, to improve EESOH performance and to assure EESOH compliance—all in concert. An Air Force integrated EESOH management system could provide an organizing framework to translate higher order priorities and plans into tangible EESOH actions today that support evolving warfighter requirements. The vision for the Air Force EESOH management system is to build on the success of existing programs to define built and natural infrastructure and workforce requirements based on mission requirements and then to focus planning, programming and execution efforts on optimizing and providing the infrastructure and workforce assets to the military commander to ensure a sustainable operational capability. ■

Chapter 9

Financial Stewardship: How the Air Force Provides Value to Our Stakeholders

Financial Stewardship: How the Air Force Provides Value to Our Stakeholders

Chapter 9

The Air Force executes a budget providing a highly operational mission and valued effort to support the direction of the President and Congress on behalf of other stakeholders in the American Public (see figure 9-1).

In Fiscal Year 2007 (FY07), the Air Force continued to pursue and excel in the defense of America's interests in a historically unprecedented and dynamic strategic environment. The Air Force remains committed to and successful in achieving our top service priorities:

- Win Today's Fight
- Take Care of Our Airmen
- Prepare for Tomorrow

The integrated components of our Air and Space Expeditionary Force continue to be involved in operations including major theater war, homeland security and humanitarian relief. Air Force people and organizations operate with unprecedented effectiveness and efficiency, all while constantly preparing to face the challenges of the future. The demands on air and space power for our country are many, but informed and wise modernization has proven that even with constrained resources we can meet these demands. One way the Air Force is modernizing is in the energy arena when it became clear the Air Force, along with all U.S. government functions, would have to spend much more for petroleum and petroleum-based products. Higher fuel prices were not just recognized in expenditures and in future financial planning and budgeting, but also with decisive action. The Air Force took the lead in energy conservation initiatives: using alternative fuels, implementing conservation initiatives and promoting new technologies. Additionally, the Air Force placed increased emphasis on Utility Privatization in its programming and budget. Utility Privatization affords the opportunity to divest itself of the utility infrastructure and shifts the responsibility of recapitalizing/maintaining the aging utility systems on the utility provider.

Air Force efforts continuously consider and balance economic, social and environmental obligations. This provides an intrinsic direct return on the 'financial assistance' offered by the ultimate stakeholder, the American taxpayer.

All Air Force initiatives are accomplished in accordance with applicable laws. We are focused on complete compliance with Federal directives and Secretary of the Air Force guidance to support the Air Force Chief Financial Officers Act compliance goal to "Implement open, transparent business practices and achieve a clean audit." This initiative, coupled with our financial system compliance and data reliability efforts, as well as participation in the Office of the Under Secretary of Defense (Comptroller) Financial Improvement and Audit Readiness Plan,

Air Force Budget (Appropriated by Fiscal Year)		
FY 2007	**FY 2006**	**FY 2005**
$128.8	$127	$118.6

http://www.saffm.hq.af.mil/budget/

Figure 9-1. Air Force Budget Appropriated by Fiscal Year (Billions)

is improving the reliability of financial decision-making information available to the warfighter.

An organization's economic performance is fundamental to understanding the organization and its basis for sustainability. Financial statements provide information about the financial position, performance and changes in the financial position of an organization such as the corporate Air Force. They also provide the results and missions achieved in managing the financial capital provided by Congress as a stakeholder and the American tax payer as essentially the bill payer. Financial indicators measure the outcomes of the Service's activities and the effect of these outcomes on our stakeholders. Data is compiled from figures in several accountable systems and then validated through audited financial accounts and statements. These financial statements disclose to the public:

- The amount and nature of assets, liabilities and net assets
- The effects of transactions and other events and circumstances that change the amount and nature of net assets
- The amount and kinds of inflows and outflows of economic resources during a period and the relation between the inflows and outflows.

The Air Force Annual Financial Statement presents the Air Force's publicly reported information for recommended and actual performance. The Annual Financial Statements may be accessed and reviewed by seeing http://www.saffm.hq.af.mil/financialstatement.asp. To reflect Air Force Leadership's commitment to being responsible stewards of the nation's resources, the Secretary of the Air Force provided this opening message in the United States Air Force Annual Financial Statement:

> *"I cannot overstate the fact that the stewardship of funding entrusted to us by the American people must remain a top Air Force priority…Responsible financial management is not an option for the United States Air Force, it is a requirement. We will continue to fly, flight and win and we are dedicated to victory in air, space and cyberspace. We will continue to maintain our Air Force Core Values of "Integrity First, Service Before Self, Excellence in All We Do," and of course, we will continue to serve the American People. In the*

end, we are stewards of taxpayer dollars, working with utmost responsibility to "Finance the Fight" for the United States Air Force."

Further information provided by the Secretary and the Chief of Staff on the Air Force's direction can be found in the Air Force Posture Statement for 2008. See http://www.posturestatement.af.mil/. ■

Chapter 10

Recognitions, About the Data and Index

Joint Strike Fighter Test and Data Assurance Team received the EPA Climate Protection Award in 2007

The Air Force energy, environmental, safety and occupational health management programs have been recognized for leadership and significant contributions to operational excellence. We are working steadfastly to align our sustainable practices with the models currently adopted by a growing number of corporations who are achieving a competitive advantage by taking a look at how its processes impact their financial status as well as their environmental and social well-being. In Fiscal Year 2007 (FY07), the Air Force was acknowledged for their efforts through many awards, as shown in Figure 10-1 and discussed throughout this report.

Award	Recipient	Category
Energy		
2007 Presidential Award	Air Force Energy Senior Focus Group	Leadership in Federal Energy Management
2007 Federal Energy and Water Management Award	Eight of thirteen Air Force submissions were awarded	Energy & Water Management Environment
Environment		
2008 White House Closing the Circle Award	Robins AFB, GA	Environmental Management Systems
	Vandenberg AFB, CA	Waste/Pollution Prevention

Continued next page

Figure 10-1. Air Force Awards and Recognitions by Program Area

Award	Recipient	Category
2008 White House Closing the Circle Award, Honorable Mention	Charleston AFB, SC	Environmental Management Systems
	Fairchild AFB, WA	Alternative fuel and fuel conservation in transportation
	Robins AFB, GA	Green Purchasing
2007 General Thomas D. White Award	Columbus AFB, MS	Environmental Quality (Non-Industrial Installations)
	153 Airlift Wing, Cheyenne, WY (ANG)	Environmental Quality (Reserve Component including Air National Guard)
	Seymour Johnson AFB, NC	Restoration (All Installations)
	Columbus AFB, MS	Honorable Mention (Outstanding Public Outreach Program)
	Robins AFB, GA	Pollution Prevention (Industrial Installations)
	Hurlburt Field, FL	Natural Resources Conservation (Small Installations)
	Elmendorf AFB, AK	Cultural Resources Management (All Installations)
	Hill AFB, UT (Environmental Engineering Team)	Environmental Quality (Individual/Team Excellence)
	Patrick AFB, FL (45 CES/CEV)	Restoration (Individual/Team Excellence)
	Fairchild AFB, WA (Environmental Management Subcommittee)	Pollution Prevention Acquisition (Individual/Team Excellence)
	Patrick AFB, FL (45 CES/CEV)	Natural Resources Conservation (Individual/Team Excellence)
2007 Secretary of Defense Environmental Award	Seymour Johnson AFB, NC	Restoration
	Columbus AFB, MS and Hill AFB, UT	Environmental Quality
	Robins AFB, GA	Pollution Prevention
	Fairchild AFB, WA	Environmental Excellence

Continued next page

Figure 10-1, continued. Air Force Awards and Recognitions by Program Area

Award	Recipient	Category
2007 Best of the Best Stratospheric Ozone Protection Award	Air Force Aeronautical Systems Center and Air Force Research Laboratory (Category: Leadership in aviation halon replacement)	Leadership in stratospheric ozone protection
EPA Performance Track	Charleston AFB, SC	
	Elmendorf AFB, AK	
	Minot AFB, ND	
	Nellis AFB, NV	
	Seymour Johnson AFB, NC	
	Sheppard AFB, TX	
	Kingsley Field ANG, OR	
	Ellsworth AFB, SD	
2007 EPA Climate Protection Award	Joint Strike Fighter Emissions Test Development Team	Team Award
Safety		
Air Force Safety Awards Program	Various	Safety
VPP Star Status	148th FW, Duluth ANG, MN	Voluntary Protection Program

Figure 10-1, continued. Air Force Awards and Recognitions by Program Area

Figure 10-2 identifies references to specific Air Force data presented in this report. All data included in this first report covers the period up to the end of September 2007 (FY07) and was collected from publicly available Air Force reports. The basis for reporting the performance data, including data measurement techniques, calculations and the basis for reporting on joint ventures/leased facilities/contracted operations, is explained in each source document used throughout this report.

Air Force References Cited

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Unites States Air Force (USAF). 2008. Air Force Strategic Plan 2006 – 2008. Retrieved online: http://www.af.mil/shared/media/document/AFD-060919-008.pdf.

United States Air Force (USAF). 2008. Installations, Environment & Logistics. Retrieved online: http://www.safie.hq.af.mil/esoh/index.asp.

Figure 10-2. Air Force References Cited

The following section of this report contains references to Air Force information related to each of the report elements and the economic, environmental and social responsibility performance metrics recommended by the Global Reporting Initiative (GRI). Figure 10-3 outlines the specific description and indicator for recommended GRI reporting content and how the Air Force information in this report references this information. Figure 10-4 provides a Report Index (and applicable web links) to GRI Economic, Environmental and Social Performance Indicators. This section is followed by a statement that attests to the Air Force's self declaration of the contents of this report.

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
1	Vision and Strategy	
1.1	Statement from the most senior decision maker of the organization	Page i, Our Commitment
1.2	Description of key impacts, risks and opportunities.	FY08 Air Force Posture Statement: *http://www.posturestatement.af.mil*
2	Organization Profile	
2.1	Name of reporting organization.	Air Force website: *http://www.af.mil*
2.2	Organization mission, functions and responsibilities	Air Force Organization fact sheet: *http://www.af.mil/factsheets/factsheet.asp?id=2*
2.3	Operational structure of the organization.	Air Force strategic plan: *http://www.af.mil/shared/media/document/AFD-060919-008.pdf*
2.4	Location of organization's headquarters.	Defense website: *http://pentagon.afis.osd.mil/*
2.5	Number of countries where the organization operates	Air Force website: http://www.af.mil/factsheets/
2.6	Nature of ownership and legal form.	Not applicable
2.7	Markets served	Air Force Public Affairs website: *https://www.palink.hq.af.mil/*

Continued next page

Figure 10-3. Index of Air Force FY07 Information References to GRI Report Content Recommendations

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
2.8	Scale of the reporting organization	FY07 Air Force Annual Financial Report: http://www.defenselink.mil/comptroller/cfs/fy2004/FY_2004_Air_Force_Financial_Report.pdf FY08 Posture Statement: http://www.posturestatement.af.mil
2.9	List of stakeholders	FY08 Air Force Posture Statement: http://www.posturestatement.af.mil
2.10	Awards received in the previous reporting period	FY08 Air Force Posture Statement: http://www.posturestatement.af.mil
3	Report Profile	
3.1	Reporting period for information provided	Page 10
3.2	Date of most recent previous report (if any)	Not applicable – first report
3.3	Reporting cycle (annual, biennial, etc.)	Page 10, annual
3.4	Contact point for report	Page 11
	Report Scope and Boundary	Page 09
3.5	Process for defining report content	Page 10
3.6	Boundary of the report	Page 09
3.7	State any specific limitations on the scope or boundary of the report	Page 10, this first report is limited in scope, but provides links to publicly available information about Air Force sustainability initiatives

Continued next page

Figure 10-3, continued. Index of Air Force FY07 Information References to GRI Report Content Recommendations

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
3.8	Basis for reporting	Page 10, the basis of reporting for each source report is described within their text, see below examples; FY07 Air Force Annual Financial Report: http://www.defenselink.mil/comptroller/cfs/fy2004/FY_2004_Air_Force_Financial_Report.pdf FY07 DoD Energy management Report, page iv, 29: http://www.acq.osd.mil/ie/irm/Energy/energymgmt_r eport/fy07/DoD-Narrative-Final.pdf FY07 Defense Environmental Programs Report to Congress, pg 39: https://www.denix.osd.mil/portal/page/portal/content/environment/ARC/FY2007/02_FY07DEPARC_Upfront_final.pdf
3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report	Page 10
3.10	Explanation of the effect of any re-statements of information provided in earlier reports	Not applicable - first report
3.11	Significant changes from previous reporting periods	Not applicable - first report
3.12	Table identifying the location of the Standard Disclosures in the report	Page 89
3.13	Policy and current practice with regard to seeking external assurance for the report	Page 10
4	Governance Commitments and Engagement	
4.1	Governance structure of the organization	Page 7, Air Force website: http://www.af.mil/factsheets/

Continued next page

Figure 10-3, continued. Index of Air Force FY2007 Information References to GRI Report Content Recommendations

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
4.2	Indicate whether the Chair of the highest governance body is also an executive officer	Civilian and military leadership roles prescribed in the U.S. Code (USC) Title 10 - Armed Forces: http://uscode.house.gov/download/title_10.shtml Specifically, Chapter 803 - Department of the Air Force
4.3	The number of members of the highest governance body that are independent and/or non-executive members	Leadership section of the Air Force website: http://www.af.mil/library/afchain.asp; 10 United States Code (USC) Title 10 – Armed Forces, Chapter 803 - Department of the Air Force
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body	Page 4 and FY08 Air Force Posture Statement: http://www.posturestatement.af.mil
4.5	Linkage between compensation for members of the highest governance body, senior managers and executives and the organization's performance	Office of Personnel Management policy on New Performance-Based Pay System for the Senior Executive Service: http://www.opm.gov/oca/compmemo/2003/2003-19.asp
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided	10 United States Code (USC) TITLE 10 – ARMED FORCES, Chapters 137 and 139: http://uscode.house.gov/download/title_10.shtml
4.7	Process for determining the qualifications and expertise of the members of the highest governance body for guiding the organization's strategy on economic, environmental and social topics	10 United States Code (USC) Title 10 – Armed Forces, Chapter 33: http://www.posturestatement.af.mil
4.8	Internally developed statements of mission or values, codes of conduct and principles relevant to economic, environmental and social performance and the status of their implementation	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14

Continued next page

Figure 10-3, continued. Index of Air Force FY2007 Information References to GRI Report Content Recommendations

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental and social performance	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14
4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental and social performance	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14
4.12	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or endorses	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1. The Air Force also subscribes to the U.S. Green Building Council's LEED® standards for new construction: http://www.usgbc.org
4.13	Memberships in associations (such as industry associations) and/or national/ international advocacy organizations in which the organization	Not reported in one Air Force location
4.14	List of stakeholder groups engaged by the organization	FY08 Air Force Posture Statement: http://www.posturestatement.af.mil
4.15	Basis for identification and selection of stakeholders with whom to engage	Air Force Public Affairs: https://www.palink.hq.af.mil/ and http://www.military-manuals.com/3_by_air/us-air-force-manuals/series-35-us-air-force-manuals/us-air-force-public-affairs-management-manuals-series-35.html
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group	Air Force Public Affairs: https://www.palink.hq.af.mil/

Continued next page

Figure 10-3, continued. Index of Air Force FY2007 Information References to GRI Report Content Recommendations

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
4.17	Key topics and concerns that have been raised through stakeholder engagement and how the organization has responded to those key topics and concerns, including through its reporting	Air Force Public Affairs: *https://www.palink.hq.af.mil/*
PA	Public Policies and Performance Integration Measures	
PA1	Describe the relationship to other governments or public authorities and the position of the agency within its immediate governmental structures	Air Force and Defense web sites: *http://www.af.mil* and *http://www.defenselink.mil/odam/omp/pubs/GuideBook/Pdf/DoD.PDF*
PA2	Define sustainable development used by the public agency and identify any statements or principles adopted to guide sustainable development policies	Air Force Sustainable Design and Development Policy
PA3	Identify the aspects for which the organization has established sustainable development policies	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14. Also See Chapters 3 and 4.
PA4	Identify the specific goals of the organization for each aspect listed in PA3	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14. Also see Chapters 3 and 4.
PA5	Describe the process by which the aspects and goals in PA3 and PA4 were set	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14.

Continued next page

Figure 10-3, continued. Index of Air Force FY2007 Information References to GRI Report Content Recommendations

GRI Indicator	Description of GRI Report Recommended Report Content	Reference to Air Force Information
PA6	For each goal, provide the following: implementation measures; results of relevant assessments of the effectiveness of measures before they are implemented; targets and key indicators used to monitor progress, with a focus on outcomes; description of progress relative to goals and targets in the reporting periods, including results of key indicators; actions to ensure continuous improvement toward reaching the public agency's goals and targets; post-implementation assessment and targets for the next time period; and public policies and implementation measures	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14. Also see Chapters 3 and 4
PA7	Describe the role of and engagement with, stakeholders relative to the items disclosed in PA6.	As guided by official Air Force Energy, Environmental and Safety and Occupational policy directives and instructions. See Figure 2-1, page 14

Figure 10-3, continued. Index of Air Force FY2007 Information References to GRI Report Content Recommendations

Hill AFB, UT won the 2007 Thomas D. White award for environmental quality individual team

Focus Area	Report Index to GRI Economic, Environmental, and Social Performance Indicators
Economic	EC1, EC 3, EC8, PA8-PA10, PAS - Chapter 9 of this report, FY07 Air Force Annual Financial Report: http://www.saffm.hq.af.mil/budget/ DoD Performance and Accountability Statement for FY07 http://www.defenselink.mil/comptroller/par/index.html
	PA11-PA13 – Executive Order 13423: http://ofee.gov/eo/eo13423_main.asp DoD Green Procurement Strategy: https://www.denix.osd.mil/portal/page/portal/denix/environment/green_procurement
Energy and Environmental	EN3, EN4 – Chapter 3 of this report, FY07 Air Force Annual Financial Report: http://www.saffm.hq.af.mil/budget/
	EN5, EN6, EN8 – DoD Energy Management Report, FY07: http://www.acq.osd.mil/ie/irm/Energy/energymgmt_report/main.shtml
	EN7 – Chapter 3 of this report, DoD Energy Management Report, FY07: http://www.acq.osd.mil/ie/irm/Energy/energymgmt_report/main.shtml
	EN11 – EN15 – Chapter 4 of this report, FY07 DoD Environmental Report to Congress (appendix G): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
	EN17 – Chapter 7 of this report
	EN18 - FY07 Air Force Annual Financial Report: http://www.saffm.hq.af.mil/budget/
	N19 - FY07 DoD Environmental Report to Congress (appendix Z): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
	EN20 – Chapter 4 of this report, FY07 DoD Environmental Report to Congress (appendix Z): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC

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Figure 10-4. Air Force Index to GRI Economic, Environmental and Social Performance Indicators

Focus Area	Report Index to GRI Economic, Environmental, and Social Performance Indicators
Energy and Environmental	EN22 – Chapter 4 of this report, FY07 DoD Environmental Report to Congress (appendix Y): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
	EN24 - FY07 DoD Environmental Report to Congress (appendix W): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
	EN26 - FY07 DoD Energy Management Report, Air Force: http://www.acq.osd.mil/ie/irm/Energy/energymgmt_report/main.shtml FY07 DoD Environmental Report to Congress: https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
	EN30 –Chapter 4 of this report, FY07 DoD Environmental Report to Congress (appendix B): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
Social	LA1 – The Book 2008, Air Force IDEAS Database
	LA2 – The Air Force reports demographic information annually, The Book 2008, Air Force IDEAS Database
	LA5 – Chapters 5 and 8 of this report, Air Force BRAC FAQs: https://www.af.mil/brac
	LA7 – Air Force Safety Center Statistics, Department of Labor Annual Report, FY07
	LA8 – Chapters 5 and 8 of this report
	LA10 - FY07 Air Force Annual Financial Report: http://www.saffm.hq.af.mil/budget/
	LA11 - FY07 Air Force Annual Financial Report: http://www.saffm.hq.af.mil/budget/
	LA13 – FY07 Air Force Almanac

Continued next page

Figure 10-4, continued. Air Force Index to GRI Economic, Environmental and Social Performance Indicators

Focus Area	Report Index to GRI Economic, Environmental, and Social Performance Indicators
Social	LA14 - Military pay rates: http://www.dfas.mil/militarypay/militarypaytables
	HR4 – Air Force Personnel Statistics: http://www.afpc.randolph.af.mil/library/airforcepersonnelstatistics.asp
	HR5 - HR9 – Not Reported
	SO1 – Office of Economic Adjustment: http://www.oea.gov/OEAWeb.nsf/Home?OpenForm Base Realignment and Closure 2005 Air Force: http://www.defenselink.mil/brac
	SO8 - FY07 DoD Environmental Report to Congress (appendix V): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC
	PR1 – AFPD 63-1; Air Force Acquisition System
	PR9 – Chapter 4 of this report, FY07 DoD Environmental Report to Congress (appendix V): https://www.denix.osd.mil/portal/page/portal/denix/environment/ARC

Figure 10-4, continued. Air Force Index to GRI Economic, Environmental and Social Performance Indicators

Vandenberg AFB, CA won the 2008 White House Closing the Circle Award

List of Acronyms	
AF/A7C	Office of the Civil Engineer
AFB	Air Force Base
AFCEE	Air Force Center for Engineering and the Environment
AFCESA	Air Force Civil Engineer Support Agency
AFCYBER(P)	Air Force Cyberspace Command (Provisional)
AFI	Air Force Instruction
AFPD	Air Force Policy Directive
AFRL	Air Force Research Laboratory
AFSO21	Air Force Smart Operations for the 21st Century
AMP	Aerospace Medical Program
APTO	Advanced Power Technology Office
AFRESS	Air Force Reportable Events Surveillance System
BRAC	Base Realignment and Closure
BTU	British Thermal Unit
CONUS	Contiguous United States
CAPM	Critical Asset Prioritization Methodology
CFO	Chief Financial Officer
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
COLE	Carbon On-Line Estimating Tool
CY	Calendar Year
dB	decibels
DoD	Department of Defense
DRU	Direct Reporting Units
E-85	Ethanol
ECAMP	Environmental Compliance Assessment and Management Program
EESOH	Energy, Environment, Safety and Occupational Health
EMS	Environmental Management System
EO	Executive Order

Continued on nexr page

List of Acronyms	
EPA	Environmental Protection Agency
EPAct05	Energy Policy Act of 2005
FOA	Field Operating Agencies
FY	Fiscal Year
GHG	Greenhouse Gas
GPP	Green Procurement Program
GRI	Global Reporting Initiative
HAWC	Health and Wellness Center
HFC	Hydrofluorocarbons
HSI	Health Services Inspections
ICRMP	Integrated Cultural Resource Management Plans
INRMP	Integrated Natural Resource Management Plans
IRP	Installation Restoration Program
JCS	Joint Chiefs of Staff
JSEM	Joint Services Environmental Management
LSAT	Logistics Standardization Assessment Team
MAJCOM	Major Command
MMRP	Military Munitions Response Program
MPG	Miles Per Gallon
N_20	Nitrous Oxide
NIM	Natural Infrastructure Management
OEH	Occupational and Environmental Health
ODS	Ozone Depleting Substances
OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
PCB	Polychlorinated Biphenyl
PFC	Perfluorocarbons
RAB	Restoration Advisory Board
SAF/IE	Secretary of the Air Force Installations, Environment & Logistics
SEG	Ground Safety Division

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List of Acronyms	
SEM	Education, Media and Force Development Division
SF_6	Sulfur Hexafluoride
SFG	Senior Focus Group
SHARE	Safety, Health and Return to Employment
TCR	The Climate Registry
USAF	United States Air Force
USC	United States Code
USFS	United States Forest Service
VPP	Voluntary Protection Program

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

OFFICE OF THE ASSISTANT SECRETARY

MEMORANDUM FOR RECORD

FROM: SAF/IE

SUBJECT: Attestation of Global Resources Initiative Reporting Framework Level of Achievement for 2007 "U.S. Air Force Energy, Environment, Safety and Occupational Health: Managing for Operational Sustainability" Report

As the Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety and Occupational Health, I affirm to the best of my knowledge that the subject report meets the conditions to self-declare conformance to the Application Level B reporting requirements of the Global Resources Initiative G3 Reporting Framework.

KEVIN W. BILLINGS
Acting Assistant Secretary
(Installations, Environment & Logistics)


U.S. AIR FORCE